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THE RUBBER AGE

ESTABLISHED 1917

COVERS ALL PHASES OF THE PRODUCTION AND MARKETING OF CRUDE RUBBER AND THE MANUFACTURE AND DISTRIBUTION OF RUBBER GOODS

Vol. 37 APRIL, 1935 No. 1

INDEX TO CONTENTS

1935 Rubber Bathing Apparel 19

The Future of Rubber Chemistry 21
By William C. Geer

A Housewife Looks at Raincoats 23
By Bernice Brown McCullar

Rubber Division Spring Meeting 24

Dixie Junior—A New Clay 26

Use of Rayon as a Tire Fabric 27

Essar—A Softened Rubber 28

Latex Molded Goods 29
By E. A. Hauser

A Powdered Rubber Machine 29

Rubber in Packard Automobiles 30

Rubber Parts on Trackless Trolley 30

New Equipment Section 31

REGULAR DEPARTMENTS

Late Domestic News 35
Financial News 43
Book Reviews 33
New Goods 45
Names in the News 41
Rubber, Cotton Markets 46
Editorials 34
Chemical Markets 47
Statistics 48
Market Place 52
Advertising Index 56
Classified Ads 55

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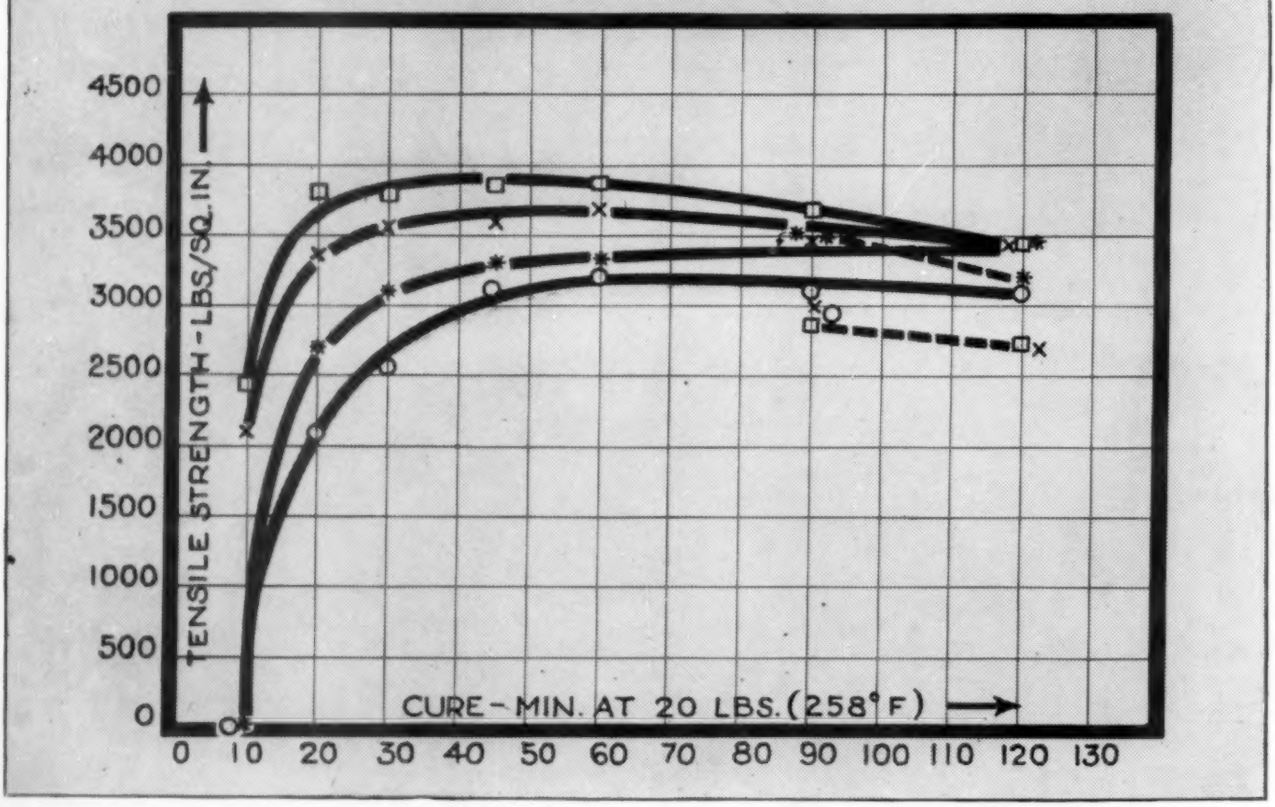

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THE RUBBER AGE

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1935 Rubber Bathing Apparel

Removal of Several Objectionable Characteristics Feature U. S., Miller and Seamless Bathing Suits for New Season

SEVERAL new features have been incorporated into the various lines of rubber bathing suits for the 1935 season, not the least of which is the development of new materials by the U. S., Miller and Seamless Rubber companies. Many of the objectionable features in these suits have been entirely eliminated from the new models, principally the earlier fault of collecting and holding water which has been eliminated by the insertion of net or open cut-outs at strategic points about the hips and elsewhere. The heat element, a former source of consumer complaint, has also been improved upon. Because of these improvements, plus the style and chic which rubber makes possible, the rubber suit manufacturers contemplate a successful 1935 season.

The Miller Rubber Company, Inc., has introduced five models in its new line: the Aerator, Plaitex, Zig-Zag and two striped crepe models. Trunks on these suits, this year, are made in three pieces, instead of four as formerly, which makes for a smoother front, insures better fit, and provides less strain on the suit. The Aerator model, shown for the first time, is made of buoyant-like rubber, light in weight, is of porous quality, and presents an outside surface like the smart rough crepe fabrics, and an inside surface said to be as smooth as silk. It is designed in a two-piece suit, with pull-on trunks with sufficient elasticity to hold the trunks in shape and yet provide comfort for the wearer. It is supplied in five different colors and retails at $2.95.

The Plaitex number has a fabric-like finish which

Two of the Seamless "pebble crepe" rubber bathing suits. Both are one-piece models the one on the right making use of the popular rope halter.

gives it softness along with durability. Modern looking fish are worked into the print design called "Beach Print." Following the modern fashion decree it, too, is of two-piece style the trunk being made of three pieces so that there is no seam down the center-front. Two snaps at each side fasten the trunks, which are made to fit high over the waistline. The topper of this model has a halter neckline ending in ties in the front, the ties snapping into an Ascot effect.

The two Striped Crepe models featured by Miller are made of crepe rubber which has the appearance of a fashionable fabric. The stripes are wide and narrow and colorful. Consisting of shorts and brassiere tops, the trunks have seamless fronts. The top has small revers and a halter neckline. The brassiere fastens with ties and buttons onto the trunks at the center-front. Blue, green and brown are used in various color combinations on this type suit. Prices range from $1.95 to $3.75.

Made of printed crepe rubber the Miller Zig-Zag model has pull-on trunks with brassiere top that fits well over the trunks. Solid color bandings give this model a touch of contrast. The print design consists of wavy stripes. Ties at the neckline and on the brassiere make the suit adjustable to the figure. Dominating colors in the print are red, blue, green and yellow.

Retaining its specially developed Krepe-Tex material in all but two of its 12 models introduced for the 1935 season U. S. Rubber has taken the "bag" out of rubber bathing suits by the development of a new material called Kool-Tex. Styles No 675 and 676 feature this newly-developed material which is made of latex, poured on forms that have projections occurring in patterns, producing a sheet with patterned holes which simulate lace. It is described as "perforated latex, the perforations forming the pattern."

In the two Kool-Tex models another innovation in rubber bathing suits has been made. Both models are reversible. Model 676 is a suit and skirt combination. Each of these pieces are reversible, having an alternate side of white, giving the wearer the benefit of four possible color combinations in one suit. The top ties in a small bow at the left shoulder. The second Kool-Tex model (No. 675) is a sleek one-piece model with a rope tie. It is available in several colors with white on the alternate side of each suit.

Although the U. S. Rubber Krepe-Tex models do not have the patternwork holes which feature the Kool-Tex styles, a fish-net effect has been inserted at the hip to allow water draining. This fish-net insertion occurs in various forms and shapes, such as an anchor, or some other design emblematic of marine life. Another purpose of the fish-net effect is to provide for ventilation, making the entire line truly "air conditioned." One of the models is designed in the *Goona Goona* style. It is a two-piece detachable skirt model in which the brassiere snaps to the trunks. It is a backless style with a rope tie around the neck, and comes in solid color combinations or print top with solid trunks.

The Miller "Aerator" rubber suit, introduced this year, is seen at the right. The other is one of several colorful striped models.

Still another model (No. 3594) is a one-piece Krepe-Tex which gives the appearance of a two-piece style, with the brassiere top being attached to the trunks at the back. There is lacing in the trunks of this model. Other models feature shirred inserts, printed Krepe-Tex, pleated flaring skirts, sailor-collar trim lacings and colorful combinations. A line of children's all-rubber swim suits of Krepe-Tex material is also included in the 1935 U. S. Rubber line, as is a quick-drying Kool-Tex trunk for men, available in three sizes. A women's rubber supporter for wear under both bathing suits and as a controlling and reducing garment, rounds out the line.

Composed of six models the Seamless Rubber Company's new line is being merchandised under the trade name of "Gulf Stream." A new "pebble crepe" process developed by the company has produced a tough durable fabric said to give longer wear and added satisfaction to the consumer. The rubber fabric has the feel of *crepe de chine* and is claimed to model over the body like skin. Colors range from subdued shades to vivid hues. Styles range from conventional skirt effects with full open backs to combinations of skirt-pants models. The rope suspender, supporting the front or brassiere, is used in all six Seamless models. Of these models two are one-piece suits, two are two-piece suits, another is a one-piece skirt suit with detachable skirt, and the sixth is a skirt only.

One of the one-piece models (SR 6030) comes with solid white body and assorted, contrasting color trim which appears at the breast and at the hip in the form of three consecutive diamonds arranged to simulate a rope with a knot at the bottom. It has a neck suspender which ties at the back. Model SR 6060, a two-piece suit, has a white trunk which has a wide outseam stripe matching the color of the upper which is cut with a full open back and has an attractive tie suspender at the top matched by a knot in the lower center back of the upper piece.

Of the five Miller models four are sold in conjunction with complete ensembles. The Aerator Ensemble includes the suit, a turban, and bathing shoes to match. Soles and heels in the shoe are of aerator rubber putting spring into the step. The Plaitex models and the two striped crepe models are also merchandised in an ensemble form. In the case of each of the six Seamless models caps and sandals may be purchased, in colors which harmonize with the bathing suits, as extras.

The U. S. Rubber line of rubber bathing caps is available this season in a wide variety of styles, shapes, and designs. Among the designs are those depicting shell patterns, ringlets, waves, anchors, stars, etc. One outstanding model comes with a provocative little brim worn over the right eye. Another is equipped with adjustable chin strap. Still another features reversibility.

The "pebble crepe" process has been applied to twenty models in the 1935 Seamless bathing cap line (51 styles in all) which features an "aviator" model predominantly. Other cap models include steam-cured gum and latex makes. A wide variety of colors and designs are available in this line. Miller rubber caps, which retail from 10 to 75 cents include the Aer-

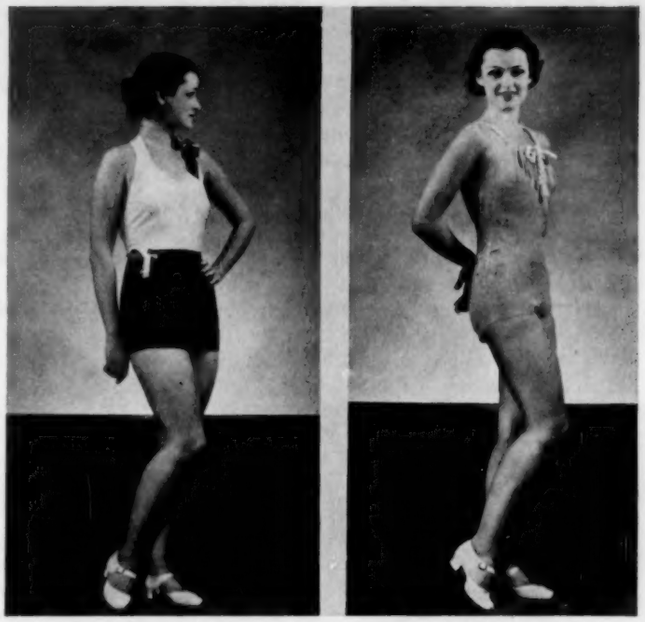
ator Aviator cap, Plaitex Wrap-Band turban and Anode models. The new caps are said to be in lighter weights than ever before. Features of the 1935 line include: designs that simulate fashionable fabrics, removable studs on aviator models to attach to chin straps, stronger reinforcing on seams, closer fitting and more watertight.

Sandals retailing from 79c to $1.00 are also featured by Miller for the 1935 bathing season. Three new models have been introduced. One of these uses criss-cross straps of smart corduroy ribbed rubber designed to make an ultra-smart sandal. The ankle strap is equipped with a buckle, making it adjustable. The insole is of cork as is the heel. Another of the three models features a "knitweave" design, flattering to the foot. It has a wide toe rubber strap and cut-out effect heel straps which are held on by means of an adjustable ankle strap equipped with a fastener. The third model is the Aerator Bathing Sandal which utilizes wide rubber bands over heel, instep and toe. An aerator sole matches the color of the bands. The bands on this sandal are stated to be unusually elastic.

Among the bathing shoe models being merchandised by U. S. Rubber for the new season is one made of fishnet, an improvement over last year's style. It has a real fishnet upper and boasts a new Cuban heel and cork-and-crepe sole. A Greek model (No. 526) has a triple cross-strap open design. It has a cork-and-crepe sole, a modified heel lift and an adjustable heel strap. All of the new bathing shoe models in this line are reinforced with a metal arch, an exclusive feature.

Both Miller and Seamless are also merchandising women's trunks to wear under rubber or fabric bathing suits. The Miller trunks are made of good quality gum rubber, smooth, for the purpose of insuring additional comfort and proper fit of suit. Under the trade name of "Briefs" Seamless offers inner trunks for molding the figure without binding. They are snug-fitting and unobtrusive and are intended for figure support. Seamless recommends them for use under bathing suits or "other outer garments."

Rubber capes are apparently not much in demand this year. Seamless shows a beach cape "as a convenient accessory either as a smart swagger beach cape or as a comfortable surface for sun-lounging." The company also offers as accessory beach apparel a bandanna made of the "pebble crepe" process, available in a variety of color combinations.



Left: the new U. S. Rubber Kool-Tex reversible suit of perforated latex. Right: fish-net inserts feature this Krepe-Tex model.

Both U. S. and Seamless are showing a variety of inflated rubber "animals", mats, etc. U. S. Rubber is merchandising a mat made of strong, rubberized canvas, about 74 inches long by 36 inches wide, which inflates to approximately 12 inches deep. This mat retails at about $7.00, although the company supplements it with smaller, conventional inflated mats at lower prices. Other rubber water novelties featured by U. S. include a pair of inflated ducks joined by a wide rubber strip to serve as a seat, an inflated horse and a 16-inch rubber ball.

Future of Rubber Chemistry

By William C. Geer

IN A paper—Rubber Industry at the Crossroads—published in the April issue of *Industrial and Engineering Chemistry*, as part of a series being presented by that publication in connection with the American Chemical Industries Tercentenary to be celebrated during the 89th Meeting of the American Chemical Society, the week of April 22 in New York City, the author reviews the scope of research which has claimed the attention of rubber chemists and technologists since the year of 1839 which marks the birth of the rubber industry. According to Dr. Geer, formerly vice-president in charge of development for the B. F. Goodrich Company, seven pertinent subjects have been thoroughly covered by the chemists, these being: crude rubber, crude rubber plus sulfur, materials mixed into crude rubber before vulcanizing, rubber plus sulfur monochloride, rubber derivatives, rubber isomers, synthetic rubber from isoprene or acetylene and the rubber molecule. Each of these subjects, of course, is divided into several phases. After discussing these subjects individually, touching briefly on the history, origin and importance of each, Dr. Geer ponders on the future of rubber chemistry. We reproduce herewith the balance of his paper dealing with the aspects and possibilities of rubber chemistry of the future, which includes a plan for cooperative research.—EDITOR.

WHAT more is there to be done? Some stockholders think the rubber chemist and designer might well be pensioned off to spend his remaining years on the golf courses of Florida and Lake Placid with ultimate improvement in corporation balance sheets. Members of the Rubber Division of the American Chemical Society, on the contrary, feel that the work of the chemist, at least, has only just begun, and that he should continue his studies, even though the present achievements are great.

It is conceivable that either of two courses may be taken by research in the rubber industry. The one is to continue along present lines and to extend our knowledge to answer specific and necessary questions. By this plan rubber plus sulfur should be improved and its uses extended.

We need to know how to protect vulcanized rubber against the action of sunlight. The field of antioxidants is unfinished.

When rubber is softened by milling it is oxidized, but not all rubber products should be softened by that means. An antioxidant to permit mixing mill softening without

oxidation should be an advantage.

More work should be done in the field of reclaimed rubber, less, perhaps, to improve it as a material to be added to garden hose tubes, than to make its re-use values approximately the same as those of the original crude.

Some work has been done in the creation of vulcanized rubber with sulfur percentages as low as 0.25 per cent. The possibilities seem excellent.

Undoubtedly there is wide opportunity for the study of reenforcing pigments. It is doubtful if carbon black is the last word, finely divided as it is. One can visualize white reenforcing pigments, lighter in gravity than zinc oxide, at least as finely subdivided as carbon black and perhaps, because of peculiar interfacial tension relations between such new products and rubber, with greater reenforcing effects against abrasion.

A vast territory for applied research still lies open; to occupy it the compounder and designer must work together. Even if no more chemical knowledge should be given them, they will increase and improve vulcanized rubber products for factory, transportation, hospitals, and home. Rubber paints and varnishes, adhesives from crude, vulcanized, or isomeric rubber—these conceptions have not scratched the surface of their potential values. The comfort of automobiles may be enhanced by rubber instead of steel springs. Can tires be made without fabric (a well-known dream)? Latex use has only begun, and undoubtedly a larger tonnage will be employed. No attempt is made to list the possibilities.

The growth of crude rubber in this country should, but unfortunately probably will not, be extensively pursued. We need a rubber Burbank as a successor to Edison in Florida. Yet the potential production of Hevea rubber in the Far East is so enormous and at so low a cost with profit to the grower that one cannot wax enthusiastic over the industrial outlook for American grown rubber. Nevertheless, goldenrod rubber is real and its study should be pursued.

Such undertakings would merely be a continuation of present methods. Shall this industry continue to occupy itself chiefly with rubber as $(C_5H_8)_xS_y$ and its few unsolved chemical but many applied problems? Great as have been the achievements with respect to vulcanized rubber, from a chemical point of view they are comprised within a relatively narrow range, that of one chemical compound. Indeed, so thorough have these investigations been that were the research laboratories of the rubber industry to be closed, the high service now rendered by vulcanized rubber could continue for many years unchanged and a further number of new products, designs, and constructions perform useful service in human life.

Industry at the Crossroads

This reasoning leads to the conviction that the rubber industry is at the crossroads with two courses before it: either to keep on along present lines or to branch out upon a broad, intense program of fundamental research. Surely rubber plus sulfur is not the only compound of value to be derived from rubber. The new plan is one by which the heavy expenditures in money, time, and personnel should be given in the field of derivatives, isomers, transformation products—call them what you will. Undoubtedly there are tremendous difficulties; perhaps methods must be developed, apparatus worked out, and new points of view imagined, in order to create and bring into use any one of the potentially large number of such substances. Maybe from this type of investigation can come a new "vulcanized rubber," which will be far superior to any product which we now call "rubber." We may dream of strong, tough, elastic, alcohol-soluble substances, of tires made from a thermoplastic material, the waste of which would be re-usable at costs not radically greater than those of the present.

As a part of this fundamental program a broad attack should be concentrated on the structure of the rubber molecule. What is rubber? Some admirable work has been done but a great deal more is needed.

This idea is really but a change of emphasis from the practical to the fundamental, and ultimate useful results may conceivably far transcend anything we now know.

The Law of Diminishing Returns

With some justice it may be claimed that no one rubber company can afford to put, perhaps, 60 to 80 per cent of its research efforts upon a program from which profitable results at the moment seem so uncertain. Therefore, may not the time have come when the rubber lions and lambs may sit down together and cooperate, if not in the control of competition and the making of prices, at least in a future program based upon chemical research? Executives must face now the law of diminishing returns in research as conducted along present lines. Suppose, then, that a cooperative research laboratory were developed, a new building built, the present research brains of the industry concentrated in it, and its location placed away from any present factory. With the pooled support of even a portion of the rubber industry, the burden upon each corporation would be relatively insignificant.

Stockholders of corporations may well ask, "What will I get from this scheme? Another and worse black eye because of 50,000-mile tires?" They would, perhaps, be interested in a chemist who could change the surplus vulcanizers and buildings into rubber latex or cotton fiber but not into just another new tire. They may be right in a sense, but this idea contemplates fundamental research which, in the rubber industry at least, can probably better be performed if non-competitive. The results from it can be made available to those who have contributed toward it, and a satisfactory control of its accomplishments can surely be realized because industrial leaders will have worked together in their development.

If an ample appropriation were made and continued over a period of ten years, the entire scope, quality, and utility of the rubber industry might be revolutionized. Even though the worst were to happen and no practical results were to come from such activities, the industry would be dead certain of its position in so far as research might influence it.

New Rubber Tank Lining

ANNOUNCED as being a decided improvement in rubber linings for tanks used in processing operations employing highly corrosive solutions, the American Hard Rubber Company, New York, has introduced a new lining known as M R-10, characterized by a high glaze surface said to offer greater resistance to acids and alkalis and more easily cleaned.

The outer layer of glazed rubber is securely bonded to a relatively thin inner layer of soft rubber which is in turn vulcanized to the steel tank. This soft rubber lamination provides an elastic contact which compensates for contraction and expansion of metal and rubber during changes of temperature. It also acts as a shock absorber to protect the lining against accident and abuse.

Another feature of M R-10 lining is the use of heavy soft rubber fillets underneath the lining in all corners. The new lining is made of a rubber compound which is said to offer longer and more efficient service as proved by actual service and laboratory tests.

A Housewife Looks at Raincoats

By Bernice Brown McCullar

Housewife of Milledgeville, Georgia

A RAINY day in springtime—what a picture of color it makes nowadays and what a drab day of gloom it used to be! There comes a gray day, when a misty rain that started falling in the night seems determined to keep up for days. By the time the world gets up in the morning the water is falling in thin silver sheets that make a gray backdrop for the earth and its inhabitants.

Rainy days are not what they used to be. Fifteen years ago, few people ventured out on a rainy day. Rain drove everybody indoors except those who had to go out and they were garbed in such funeral black and somber blues and browns that every street looked like a procession towards the undertakers'.

But now the picture is changed. A rainy day is a picture of bright color. Rain coats in colorful variety have brought gayety to the day, and rubber-clad figures in greens and scarlets and blues move animatedly about against the day's gray curtain to the tinkling music of the raindrops' silver sprinkle. Nobody stays home now because of a little rain. Even hostesses no longer postpone anything except garden parties because of the weather. A cup of tea and a sandwich before a cheery fire will draw the most confirmed recluse out on a rainy day. Bridge parties go merrily on as briskly as though a bright sun shone in the sky.

Recently, I answered my doorbell to find a young friend of mine standing there. It had been raining and her trim green raincoat was glistening with wetness, and her eyelashes were diamond-studded with raindrops. In her arms she held an enormous bunch of all those things that grow in the woods in springtime. There was a pine branch, and a sprig on which purple berries clustered, and sprays of this and that, all to bring a pungent fragrance into my house.

LEFT: A Patou-designed cape coat of smart plaid crepe. RIGHT: Another cape model with slashed hand openings. Both are U. S. Rubber models.

"Isn't it a gorgeous day?" she queried as she came into my living room for coffee and stood to warm before my open fire. "I always save my longest tramps for days like this. I like to feel the rain in my face." In her trappings of green shiny rubber she might have been blood-sister to the wood nymphs.

This rainy day, in the little Georgia town where I live, I have just been to take my children to school. My little blue-eyed Eleanor was gaily garbed in red rain-things that brought out the sparkle in her blue eyes and the red in her cheeks. My small son was very military and important looking in a brown raincoat with four pockets. Instead of dreading rainy days as I distinctly remember doing when I was a child, they greet them gleefully. If there are sounds of raindrops pattering on the roof when they awake, they run in pajamas to the window and yell joyously, "Raincoats today, Mummy!" They know it means not only bright coats to wear but hot soup at school and in the afternoon a "tea" of hot chocolate and cinnamon toast to which they may each invite a little friend home. Oh, we have made a joyous thing of rainy days!

It may be the changing world that did it. It may be the new psychology. My simple mind is not given to deep probings. I only know that I believe that our new spirits came largely from the new color in the day.

As I came riding back this morning over wet paved

(Continued on page 32)

LEFT: U. S. Rubber's double-breasted Dunbar model with Raglan shoulders. RIGHT: Talon-fastened Zip-Rain featured by Chicago Rubber Clothing Co.

Rubber Division Spring Meeting

Two Guest Speakers Round Out the Technical Sessions; Completed Program Calls for Plant Visits and Banquet

ANTICIPATING one of the largest crowds ever to attend an annual meeting, an unusually interesting and varied business and entertainment program has been prepared in connection with the 89th Annual Meeting of the American Chemical Society to be held in New York City during the week of April 22. Official headquarters will be maintained at the Hotel Pennsylvania. Three other official hotels, where divisional activities will take place, are the Hotel New Yorker, the Governor Clinton and the Hotel McAlpin. All activities of the Division of Rubber Chemistry will take place in the Hotel New Yorker, with the exception of the annual subscription dinner.

Eight papers in all, with the addition of talks by Thomas Midgley, Jr., vice-president of the Ethyl Gasoline Corporation, and Dr. Edgar Rhodes, of the Rubber Research Institute of Malaya, F.M.S., make up the program of the Rubber Division to be held on the afternoon of April 22 and the morning of April 23, both sessions to be held at the Hotel New Yorker. The first speaker will be Mr. Midgley who is scheduled to open the first session at 1 o'clock Monday afternoon. The Tuesday session starts at 9 o'clock in the morning and concludes at the noon hour.

Two additional papers were originally scheduled, abstracts for which were prepared and released by the Rubber Division, A.C.S., but were withdrawn later and may possibly be presented at some future meeting. These papers were "The Permeation of Propane and Commercial Butane through Rubber, Rubber-DuPrene, and DuPrene Compounds," by G. C. Maasen, and "Treatment of Latex Compounding Wastes," by S. I. Strickhauser.

An interesting guest speaker at the Tuesday morning, April 23, session at the New Yorker, will be Dr. Edgar Rhodes, head of the Chemical Division of the Rubber Research Institute of Malaya, Kuala Lumpur, F.M.S., who is making a trip to this country for the express purpose of appearing on the program. The last speaker to present a paper is Mr. George Sackett, of Goodyear, who will speak on the "Consumers' Crude Rubber Requirements." Following this address Dr. Rhodes will deliver a general address specifically answering the points raised by Mr. Sackett and the discussion that will invariably follow the paper's presentation.

The appearance of Dr. Rhodes in this connection is in answer to the recent attempts fostered by W. B. Weigand, of the Binney & Smith Company, and others, to bring together both the producer and consumer of rubber in order to make each better acquainted with the problems and requirements of the other. The appearance of Dr. Rhodes is the first step in this direction and will undoubtedly be followed by other equally as interesting cooperative measures.

The annual subscription dinner of the Division of Rubber Chemistry will be held Monday night, April 22, at the Casino de Paree, popular New York rendezvous, located at 254 West 54th Street. Tickets cost $4.00 each which includes dinner, entertainment and two cocktails. No extra taxes are entailed. The drawing of prizes by lucky number, one of the features of each year's dinner, will take place promptly at 6 o'clock. An interesting phase of the dinner will be a souvenir program printed on rubber, and furnished by the New York Rubber Group. The Casino de Paree presents one of the finest floor shows in

Panoramic view of the Hotel New Yorker where the Rubber Division sessions will be held.

Get Your Tickets Early for the Rubber Banquet

The Entertainment Committee handling the arrangements for the Rubber Division Banquet to be held at the Casino de Paree in New York City on Monday night, April 22, must sell tickets prior to the first session of the Rubber Division which opens at 1 o'clock on Monday afternoon.

It is therefore urged that as many members and guests as possible purchase their tickets in advance from chemical company salesmen visiting their plants, many of whom have been supplied with tickets, or from any member of the Entertainment Committee or from THE RUBBER AGE. Tickets cost $4.00 each.

For convenience, make checks payable to Peter P. Pinto and mail to THE RUBBER AGE, 250 West 57th Street, New York City, and tickets will be sent you by return mail. The Committee will appreciate your cooperation in securing tickets in advance.

—EDITOR.

New York City. The feature attraction at present is the famous Jimmy "Schnozzle" Durante, and according to the management it is expected that he will be the star of the show at the time of the dinner. Dancers, singers, novelty acts and a pulchritudinous chorus complete the entertainment program to be presented.

The Entertainment Committee in charge of dinner arrangements includes Dr. A. A. Somerville of the R. T. Vanderbilt Company, as chairman, and the following members: R. D. Gartrell (U. S. Rubber), Bruce Silver (N. J. Zinc), E. W. Schwartz (General Electric), C. R. Haynes (Binney & Smith), E. B. Curtis (Naugatuck Chemical), and C. J. Wright (General Atlas Carbon). Further information may be secured from any of these committee members.

For the entertainment of visitors and guests the Rubber Division has prepared an interesting trip to three factories, these being the U. S. Rubber Products plant, the Raybestos-Manhattan factory, and the Okonite Company plant, all in Passaic, N. J. The trip is limited to 300 persons, and the probable charge will be 50 cents a person. Busses will leave the Hotel New Yorker between 1:00 and 1:30 P. M. on Tuesday afternoon. Plant visits for the Rubber Division are in charge of R. H. Gerke, U. S. Rubber Company, Passaic, N. J.

Three additional general trips for members not affiliated with any of the scientific and technical divisions of the A. C. S. have also been arranged. The general trips include visits to the Pyrene Mfg. Company, Newark, N. J.; Bureau of Standards of R. H. Macy & Company, New York City; and the plant of the National Sugar Refining Company, in Long Island City. Any of these trips may be selected as optional choices by any member so desiring. Reservations for the general trips are in charge of S. D. Kirkpatrick, Chairman, Plant Visits Committee, 330 West 42nd Street, New York City. Arrangements for plant visits of all kinds will be explained on registration.

Three symposiums will feature the general program of the American Chemical Society, viz: on April 24 (Wednesday) a symposium will be held to bring out the relation of chemistry and chemical industry to human affairs and the national welfare. Roger Adams, A. C. S. president, will preside and will speak on the importance of research to industry. Other speakers on this symposium include Alfred H. White, William B. Bell, Lammot du Pont and Thomas Midgley, Jr. A symposium on the economic problems of the chemical industry will be held on Thursday, April 25. The third symposium will cover materials of construction in the building industry.

The Annual Banquet of the A. C. S. will be held on Wednesday night, April 24, in the Grand Ballroom of the Waldorf-Astoria. The toastmaster will be Francis Garvan, president of The Chemical Foundation. Addresses will be made by Senator Pat Harrison of Mississippi and Representative James W. Wadsworth of New York. An interesting entertainment program is being arranged.

A golf tournament will be held on Thursday, April 25, at the Upper Montclair Club, Montclair, N. J. Busses will convey participants from the Hotel Pennsylvania at 12 o'clock sharp. Luncheon will be served at the Club, and play will start at 2 o'clock. Privileges of various golf courses in the New York area are also being arranged for members.

The Spring Meeting of the New York Rubber Group has been dispensed with, the members participating in the Rubber Division sessions instead. Members of the local group will also act as hosts to the Rubber Division.

Complete abstracts of the technical papers to be presented at both sessions of the Rubber Division meeting follow:

Program of the DIVISION OF RUBBER CHEMISTRY

S. M. CADWELL, Chairman C. W. CHRISTENSEN, Sec.-Treas.
L. W. BROCK, Sergeant-at-Arms

Sessions to be held at the Hotel New Yorker.

MONDAY AFTERNOON—APRIL 22

1:00—Contributions of Chemistry to the Rubber Industry.
Thomas Midgley, Jr. (Ethyl Gasoline)

1:20—The Molecular Weights of Natural and Synthetic Rubber by the Svedberg Ultracentrifuge.
E. O. Kraemer and Wm. D. Lansing (Du Pont)

1:45—Reinforcement of Rubber by Pigments. I. Effect of Moisture on Measurements of Heat of Wetting of Gas Blacks.
C. W. Walton and H. J. Osterhof (Goodyear)

2:20—A. Fatigue Cracking Test for Tire Tread Compounds and Some of the Laws of Fatigue.
E. T. Rainier and R. H. Gerke (U. S. Rubber)

2:50—Mixed Reinforcing Pigments in Rubber. I. Effect of Binary Mixtures of Zinc Oxide, Channel Black and Clay upon the Physical Properties.
O. D. Cole (Firestone Tire & Rubber)

3:30—Heats of Reaction of the System: Rubber Sulfur.
A. T. McPherson and Norman Bekkedahl (Bureau of Standards)

6.00—Rubber Division Banquet—Casino de Paree.

TUESDAY MORNING—APRIL 23

9:00—Studies on the Variability of Plantation Rubber.
A. E. Warner (C. P. Hall)

9:20—The Carbon and Hydrogen Content of Hard Rubber.
H. L. Fisher and Y. Schubert (U. S. Rubber)

9:45—Consumers' Crude Rubber Requirements.
George A. Sackett (Goodyear)

10:10—Following the discussion of Mr. Sackett's paper, Dr. Edgar Rhodes, head of the Chemical Division of the Rubber Research Institute of Malaya, F.M.S., will give the rubber producers' point of view and will specifically answer any points raised by Mr. Sackett or in the discussion.

11:00—Business Meeting.

NOTE: Discussions will follow each paper presented.

ABSTRACTS OF PAPERS

In Order of Their Presentation

Contributions of Chemistry to the Rubber Industry. *Thomas Midgley, Jr., Ethyl Gasoline Corporation.*

This is to be in the nature of a talk, and therefore no abstract is available.

The Molecular Weights of Natural and Synthetic Rubber by the Svedberg Ultracentrifuge. *Elmer O. Kraemer and William D. Lansing, E. I. du Pont de Nemours & Co.*

The molecular weights of ether-soluble sol rubbers prepared at the Bureau of Standards and of polychloroprenes have been found to be several hundred thousand by means of the Svedberg ultracentrifuge. As solvents, ethyl ether was used for the rubbers and *n*-butyl chloride for the polychloroprenes. The intrinsic viscosities in the same solvents were found to be proportional to the molecular weights, the constant of proportionality being approximately the same for both rubber and polychloroprene. The molecular weights as determined in the ultracentrifuge are several times as great as Staudinger's viscosity values.

Reinforcement of Rubber by Pigments. 1. Effect of Moisture on Measurements of Heat of Wetting of Gas Blacks. *C. W. Walton and H. J. Osterhof, Goodyear Tire & Rubber Co.*

Earlier work on hydrophilic solids had substantially proved that the effect of the presence of small amounts of polar impurities in nonpolar liquids was an important factor in heat of wetting determinations. The present investigation shows that the presence of moisture (a polar substance) in benzene (a nonpolar liquid) has a pronounced effect on the heat of wetting values determined with rubber gas blacks, although they are most usually considered as being organophilic or hydrophobic. The results prove that to obtain duplicable heat of wetting values, the moisture content of the gas black, as well as of the liquids, must be entirely removed or closely controlled. It was

found most difficult to obtain and maintain anhydrous conditions in the calorimeter and its contents preceding and during determinations. Freshly activated charcoal proved to be an efficient drying or clean-up agent for the removal of traces of moisture from the nonpolar liquid in the calorimeter, and the use of this clean-up agent proved most effective in establishing anhydrous conditions. These results show the difficulties encountered in attempting to rate rubber blacks by means of heat of wetting measurements, as has frequently been done in the past.

A Fatigue Cracking Test For Tire Tread Compounds and Some of the Laws of Fatigue. *E. T. Rainier and R. H. Gerke, U. S. Rubber Co.*

One of the reasons for using rubber in tires is the unusual resistance of rubber to fatigue. The quantitative measurement of resistance to fatigue cracking is therefore of importance as an aid in the development of tread compounds and in tire design.

A new laboratory test for evaluating the resistance to fatigue cracking of tire tread stocks is described. The precision of the strain cycle, the quantitative measurement of the degree of cracking, and the initiation of the cracks with ozone are novel features which enhance the validity of the test.

Data are given which show that ozone cracking and fatigue cracking are additive, that the rate of growth of cracks is a function of the maximum strain, that endurance limits may exist, and that the addition of antioxidants decreases the rate of growth of cracks and raises the endurance limit. The test has been found to correlate with shoulder cracking in tires.

Mixed Reinforcing Pigments in Rubber. 1. Effect of Binary Mixtures of Zinc Oxide, Channel Black, and Clay on the Physical Properties. *O. D. Cole, Firestone Tire & Rubber Co.*

Zinc oxide-channel black, zinc oxide-clay, and clay-channel black mixtures in rubber at low and moderate loadings produced modulus and tensile properties which were additive or which conformed to the ideal mixture law for two-component mixtures. These results agree substantially with those of Beaver and MacKay. At loadings far in excess of those required for maximum tensile reinforcement, deviations from the additive effects were found.

A three-dimensional or space diagram has been found very useful in studying the relation between the properties and compositions of rubber-pigment mixtures.

Heats of Reaction of the System: Rubber-Sulfur. *A. T. McPherson and Norman Bekkedahl, Bureau of Standards, Dept. of Commerce.*

Heats of reaction of rubber with sulfur to form vulcanized compounds having empirical formulas lying between C_8H_8 and C_8H_8S (0 to 32 weight per cent of sulfur) were determined directly at 175° C. in an isothermal calorimeter which consisted essentially of an insulated copper block to which heat could be added with electrical energy or removed by adding cold steel balls. In a reaction experiment, the mixture of rubber and sulfur was placed in a cavity in the copper block and the temperature of the block was maintained constant by the addition or removal of measured quantities of heat energy until the reaction of vulcanization was complete. Differences in heat content between 25° and 175° C. ($H_{175} - H_{25}$), for unvulcanized mixtures and vulcanized compounds of rubber and sulfur, were determined in the same calorimeter by dropping the sample at 25° C. into the calorimeter at 175° C. For vulcanized compounds of rubber and sulfur, empirical formula $C_8H_8S_x$,

$$(H_{175}-H_{25})=22.2+1.2x$$

kilojoules per gram-mole of C_8H_8 in the range from $x=0$ to $x=0.5$, and

$$(H_{175}-H_{25})=24.1-2.6x$$

in the range from $x=0.5$ to $x=1.0$, where x is the number of atoms of sulfur per C_8H_8 and varies from 0 to 1.0. For unvulcanized mixtures of rubber and sulfur (C_8H_8-xS),

$$(H_{175}-H_{25})=22.2+6.2x$$

kilojoules per gram-mole of C_8H_8. The heat of the reaction of rubber with sulfur, which for the sake of simplicity may be represented as C_8H_8 (solid) + x S (solid) = $C_8H_8S_x$ (solid), was found to be linear with x from $x=0$ to $x=0.5$, at which point there is a discontinuity in the slope of the curve; and also linear with a different slope for the range $x=0.5$ to $x=1.0$. In the composition range $x=0$ to $x=0.5$, the increases in heat content for the reaction of vulcanization at 175° and 25° C. are, respectively,

$$\Delta H_{175}= -60.0x, \text{ and}$$
$$\Delta H_{25} = -55.4x$$

kilojoules per gram-mole of C_8H_8. In the range $x=0.5$ to $x=1.0$

$$\Delta H_{175}= -22.5-15.0x, \text{ and}$$
$$\Delta H_{25} = -24.8-5.8x$$

kilojoules per gram-mole of C_8H_8.

Studies on the Variability of Plantation Rubber. *A. E. Warner, C. P. Hall Co.*

Nine different accelerators in more or less common commercial use were selected. With each of these accelerators ten distinct lots of each smoked sheets, No. 2 amber crepe, and No. 1 roll brown crepe were tested. Tables of data bring out the degree of variation found: sheets show a marked variation, while the lower grades show still greater variation. None of the accelerators employed eliminated or appreciably reduced this variation.

The Carbon and Hydrogen Content of Hard Rubber. *Harry L. Fisher and Y. Schubert, U. S. Rubber Co.*

Carbon and hydrogen analyses of four samples of hard rubber are given. Sulfur apparently adds to the rubber hydrocarbon until saturation is complete before any substitution takes place, provided proper vulcanizing conditions are maintained. It is pointed out that the carbon-hydrogen ratio is one of the best indications of substitution by sulfur.

Consumers' Crude Rubber Requirements. *George A. Sackett, Goodyear Tire & Rubber Co.*

In a brief way, the more important requirements of crude rubber consumers have been discussed, giving the reason for their desirability or necessity. They are:

1. Uniform rate of cure, 2. Uniform age resistance, 3. Cleanliness, 4. Freedom from deleterious substances, 5. Freedom from added unnecessary materials, 6. Uniform plasticity, 7. Soft rubber, 8. Better packaging, 9, Lower water absorption, 10. Light-colored sheet rubber.

Consideration has been given the need for the improvements, and formulas suggested for testing the properties discussed, where these properties have been studied for some time.

The desirability of closer cooperation between producer and consumer is brought out and the hope is expressed that the present discussion will at least aid in bringing about a unification of ideas along the lines mentioned so that an orderly program of research can be evolved by those interests close to the producer.

The Rubber Producer's Point of View. *Dr. Edgar Rhodes, Head of the Chemical Division, Rubber Research Institute of Malaya.*

To bring into closer cooperation both the producer and consumer of rubber Dr. Rhodes will present the producer's point of view and specifically answer questions raised by the previous speaker or in the discussion. Since this talk will be practically extemporaneous no abstract is available.

Dixie Junior—A New Clay

TO offset the probability of the gradual decrease of the available quantity of Dixie clay the R. T. Vanderbilt Company, New York, has recently opened another deposit of "rubber clay" in the same Dixie mine which is said to have practically the same general characteristics as Dixie. So similar is this new clay to the original Dixie in its compounding properties that the company has named it Dixie Junior. It is described as a hard clay which produces a stiff, high modulus rubber mix, almost exactly the same as that obtained from the regular Dixie. Its rate of cure and aging properties are also practically the same. It may be used for the loading of soles, heels, footwear, wire insulation, proofing, tire sidewalls, cheap tire treads, latex rug backing, jar rings, packing, hospital sheeting, motor mounts, battery jars, tiling or any articles which call for a stiff clay. Dixie Junior is a whiter clay than Dixie, which, according to Vanderbilt, is of advantage in the compounding of white or colored goods.

Progress in the Use of Rayon as a Tire Fabric

Recent Developments in Experimentation Bring the Possibility of Using Rayon in Tires a Step Nearer

SEVERAL rubber manufacturers, in conjunction with leading producers of rayon yarns, have been conducting tests during the past decade to determine the possibility of using rayon as a tire fabric in place of cotton. As far back as 1926, when the first public mention of these experiments was made, the principals involved were reluctant to furnish other than meagre details. In June of that year H. T. Nones,* then Assistant Chief of the Textile Division, Bureau of Foreign and Domestic Commerce, reported that "certain rayon mills have been actively experimenting in that connection (use of rayon as tire fabric) but none of the results of these experiments have been given publicity." Although it is conceded by the principals that definite progress has been made along experimental lines in the past few years details are still almost as meagre as they were in the early stages ten years ago.

Two new items have recently created renewed interest in the possibility of rayon in tire manufacture. The first of these is the understanding that the U. S. Patent Office will shortly issue a patent on a tire that incorporates the use of rayon rather than cotton cord. The second is the plan of reorganization advanced for the Furness Corporation, one of the major concerns involved in the experiments.

As stated, actual details are meagre, yet there are several known facts of interest. The DuPont Rayon Company, Wilmington, Delaware, and the Viscose Company, Marcus Hook, Penna., are both supplying rayon to tire manufacturers, with estimates ranging between 25,000 and 30,000 pounds being furnished monthly by DuPont. The two tire manufacturers most actively engaged in current experiments are Goodyear and U. S. Rubber and it is understood that Goodyear has been experimenting for over five years. According to reports these experiments cover only truck tires at the present time, and not tires for passenger cars, on account of the fact that truck tires are subjected to harder wear and greater internal heat and are sold on a mileage basis.

The Furness-DuPont Contract

In its issue of February 27, 1935, the New York *Journal of Commerce* points out that there is an existing contract between the Furness Corporation, Gloucester City, N. J., developers of the process for using rayon as tire fabric, and the DuPont Rayon Company "which enables the latter to use the Furness Process in the manufacture of heavy yarns for tire fabrics." Referring to the same contract the *Daily News Record* of January 15, 1935, states that William H. Furness, president of the Furness Corporation, admitted that the DuPont Rayon Company had recently inquired whether the former had in any way violated this contract. Denying any such violation Mr. Furness added that some negotiations "may have been carried on between Goodyear and Budd (the E. G. Budd Mfg. Company, of Philadelphia, manufacturers of the machinery used in the Furness Process) as regards a number of changes in design of the Furness machines for the manufacture of cuprammonium rayon suitable for tire cord." Since, Mr. Furness added, the Furness Corporation was not a party to the Goodyear-Budd negotiations the Furness-DuPont contract has not been invalidated.

It is further made clear that when the recent agreement between the Industrial Rayon Corporation, Cleveland, and the Furness Corporation over patents was reached the Cleveland concern did not obtain the right to use the process for any counts finer than 150 denier. At the time it was realized that the reason 300 denier was omitted from this agreement was due to the previous Furness-DuPont contract. At the present time the Furness Corporation is in the hands of a Federal custodial trustee, but the recently-submitted plan of reorganization is expected to be approved shortly.

Description of the Furness Process

The Furness Process, as briefly described in the May 26, 1933, issue of the *Daily News Record*, is said to be a continuous process in which the yarn is not touched from the time it emerges from the spinnerette until it becomes a yarn ready for use. In the process the cuprammonium spinning solution emerges from the spinnerette into a coagulating bath of caustic soda. The yarn then travels many times around a revolving drum of monel metal rods. As it progresses, dilute sulphuric acid is dropped out of it to remove the copper from the yarn. Then water removes the traces of the acid and the yarn still on the drum moves over a heated surface which dries it. It then leaves the drum, passing through a ring twister, and finally is wound on a warp spool. The machinery for this process is produced by Budd. It is reported that Goodyear engineers have suggested several changes in the current machinery which they regard necessary to produce a yarn suitable for tire fabrics.

Although until recently it was understood that the DuPont Rayon Company was first and foremost in the supplying of yarns to the tire manufacturers for experimental purposes it has lately been revealed that The Viscose Company has been active in this respect for the last three years. Queried as to recent progress, Mr. Charles S. Venable, of The Viscose Company, advises that "It seems fairly definite assured that the ordinary type of commercial rayon is not satisfactory for the purpose. A special type of rayon will have to be developed. Several rayon companies, including The Viscose Company, in connection with leading manufacturers of automobile tires are conducting experiments along this line." Referring specifically to definite progress Mr. Venable added "Though progress has been made, the requirements for a rayon for this specific purpose have not been definitely determined and, naturally, the rayon to fulfill such requirements has not been produced."

* June 10, 1926 issue of THE RUBBER AGE, p. 185.

The use of rayon as tire fabric is being considered not from the economic angle of price, but rather for the possibilities of improved tire performance. The principal problem of the tire manufacturer is the constant battle against internal heat by reason of stress occasioned by weight and speed. It has been amply demonstrated that rayon's great advantage over cotton is its resistance to the internal heat generated inside the tire. In addition to this advantage it is also reported that one of the results of recent experiments has been the production of a rayon with considerable tensile strength, thus making its use as a tire fabric more feasible.

At the present time all of the yarn used in the manufacture of tires is cotton, including some long staple such as Egyptian Uppers, Sakellaridies, Pima, etc., but largely carded and combed peeler. Some of the sizes most used are 23-5-3, 15-3-3, 13-3-3, 23-11, 10-5, all of these being cotton yarn sizes. Inasmuch as 150 denier is equivalent to about 35-1 cotton yarn in yards to the pound, according to the *Daily News Record*, it will be seen that the size of rayon yarn will have to be in the heavier deniers or some of the medium deniers in the higher number of plys. It has not been determined whether the experiments are with yarn of as many filaments as ordinarily used for knit or woven fabrics, or whether it runs to a much lower number. The belief has been expressed by rayon experts that the smooth nature of the filaments will make for tire strength since with a smooth yarn there is less friction, an important element in tire wear and tear.

Reports are also current that some interesting experiments in the use of rayon as tire fabric are being conducted in England by the research departments of the Dunlop company and others.

Stating that it is well known that the viscose process is the basis for the yarns supplied, the *Daily News Record* of January 15, 1935, ventures the opinion that "the particular yarns supplied have special qualities among which is greater dry strength." In this connection the publication makes mention of the Lilienfeld type of viscose process yarn, introduced to the market some time ago under the trade name of "Durafil" which "had great dry strength, hardly any elasticity, and a very hard and unpleasant hand." Remarking that while these qualities may have been undesirable for dress fabrics, the publication claims they may have been just right for tire cord. The *Record* disposes of the question of elasticity (which rayon lacks) by stating that this quality is of comparatively little importance, according to many who have watched the experimental development.

In discussing the effect of using Rayon as tire fabric on cotton the *Record* further says that "the cotton which will be displaced, if any will be displaced at all, will be long staple cotton of the Pima or Sak varieties. While other cottons are used, it is said that the long staple cotton is the type used for the high quality truck tires in which the rayon cord is being tried." The Pima cotton, grown largely in Arizona and other southwestern states, was the result of experiments by the U. S. Department of Agriculture and plantings on the part of several of the larger tire companies. The Saks variety is an imported type.

When early experiments on the possibility of using rayon as a tire fabric were first started Mr. Nones pointed out the several advantages and disadvantages of the yarn. Pointing out that both rayon and cotton are pure cellulose products, chemically, he stated that "individual rayon filaments are solid, whereas cotton fibres have a tubular strength . . . the smoothness of the individual fibres results in a minimum of friction . . . it has good tenacity . . . the continuous strands of fibre give added strength to the fabric as compared with fabric made up of individual short fibres." Discussing rayon disadvantages Mr. Nones wrote that "rayon loses its tensile strength when wet. However, its natural strength is regained after drying . . . a certain percentage of oils are generally used to facilitate rayon handling. These oils would need to be eliminated to prevent injurious effects on the rubber from the oil absorbed by the yarn." It is safe to vouchsafe the remark that the advantages have been retained in the experiments, and that many of the disadvantages have been overcome or are close to improvement.

In the event that experiments in connection with rayon as a tire fabric prove to be completely successful it is extremely doubtful whether there will be an immediate adoption of the yarn. This would not be due to lack of production facilities, which are abundant, there having been produced 210,331,000 pounds in 1934, a record high, but rather to two major economic angles bound to retard its adoption, despite the fact that rayon is a commodity the production and value of which is completely controlled by man, rather than dependent on agricultural conditions, as in the case of cotton.

These two major economic angles are price and capital investment. At current prices rayon is considerably higher than cotton, and from present indications will hold that ratio for some time to come. Then there is the heavy investment of tire manufacturers in their own cotton plantations and fabric mills.

If these obstacles can be overcome then Mr. Nones' prediction of nine years ago may come true: "If rayon is proven to have the characteristics peculiarly suitable for use as tire fabric, we can depend upon inventive genius and mass production to bring its cost and use into line with tire fabrics now employed commercially."

Essar—A Softened Rubber

DESCRIBED as a "permanently soft rubber" H. Muehlstein & Company, Inc., New York, has introduced a softened rubber under the trade name of Essar, which is said to save power, labor and solvents, at the same time increasing resistance to water absorption, abrasion and tearing without affecting vulcanization, hardness, tensile, flexing or ageing. Recent tests by standard plasticity methods on 18-month old samples of softened latex crepe and of softened ribbed smoked sheets resulted in finding little or no hardness regained in either sample.

In making softened rubber,* such as Essar, the rubber is first reduced to a crumb state, heated in vacuum and compacted again in sheet form. The resulting softened rubber is more plastic than ordinary masticated rubber and therefore facilitates mixing, calendering and tubing operation, less power being required in the factory. Another factor claimed for softened rubber is that it minimizes scorching.

Processing softeners in mixes using softened rubber can be practically eliminated, especially when the softeners are used mainly to facilitate mixing and subsequent operations prior to vulcanization and have no really beneficial effect on the finished product. According to P. E. Cholet, of the Muehlstein Company, these softeners have many drawbacks, many of them after vulcanization having no elasticity of their own, their presence affecting the principal property of rubber.

Rubber reenforcing agents and fillers disperse or mix readily into softened rubber, this material being said to wet them better than ordinary masticated rubber. Essar also permits slightly higher volume loadings, a master batch of equal parts of Essar and carbon black being easily produced without any addition of softeners, according to Mr. Cholet. The new softened rubber—Essar—is being sold exclusively in the United States and Canada by the Muehlstein concern.

* See August, 1933 issue of THE RUBBER AGE—p. 206.

Latex Molded Goods

By E. A. Hauser

ABOUT 15 years ago when the interest in the manufacture of rubber goods direct from latex was once more revived, it seemed quite logical that the first attempts towards its application were directed to the manufacture of dipped goods. This was natural because we knew from old narratives that the natives of Brazil produced a variety of rubber goods, as, for example, shoes, bottles, etc., by dipping appropriately shaped molds in the natural milk sap.

It did take, however, considerably longer than those who actually pioneered this work admittedly anticipated at the start, before one could really speak of latex being used in the manufacture of dipped goods on a commercial scale. This was partly due to certain difficulties encountered in using more porous molds and mainly due to the fact that present day standards and need for continuous operation and comparatively large outputs demanded not only a very profound knowledge of the chemistry of latex, but also the development of an entirely new technique, capable of handling latex to our best advantage.

While this work was slowly but steadily advancing, latex was being introduced in increasing quantities into fields and industries outside of the actual scope of the rubber industry.

Some years ago a discovery was made simultaneously in various places, where active latex research had been carried out for several years, which in my opinion is of basic importance and which, so to speak, gave latex the long-awaited chance to enter the real domain of the rubber industry.

I am referring to the so-called sensitized latices. The term "sensitized latex" denotes a latex compound, which, by the addition of chemical reagents either is destabilized to such an extent that the rubber phase of the latex will gel or set in a given and controllable period of time at normal temperature (cold setting), or which remains stable at normal temperatures, but will set or gel if the temperature is raised to a given degree (hot setting). This setting is physically comparable to the one in the cold, as in the latter case the liberation of the ions necessary to bring about settings only takes place at a given elevated temperature.

The first applications of such sensitized latices were again in the field of producing seamless dipped goods, by introducing heated formers or molds into an appropriate latex bath, the latex nearby the heated surface being caused to thicken and to deposit on the former, giving a coherent rubber film on the surface thereof. The speed of the process is actually decidedly greater, as in a straight dipping operation; besides it enables us to produce goods with comparatively thick walls, which was only possible by combined dipping and coagulating processes.

Still, however, those processes were not yet, as a whole, satisfactory, because the deposits had to be dried to a certain extent before they could be taken off the formers, etc. A closer study of reactions taking place finally led to the detection of a line of reactions which will produce instantaneous settings either in the cold or at elevated temperature, yielding a plastic, but coherent, microporous gel, which can be dried without the danger of water remaining entrapped in the interstices of the gel; in other words, without the danger of the outside skin closing up before all the moisture has evaporated from the inside.

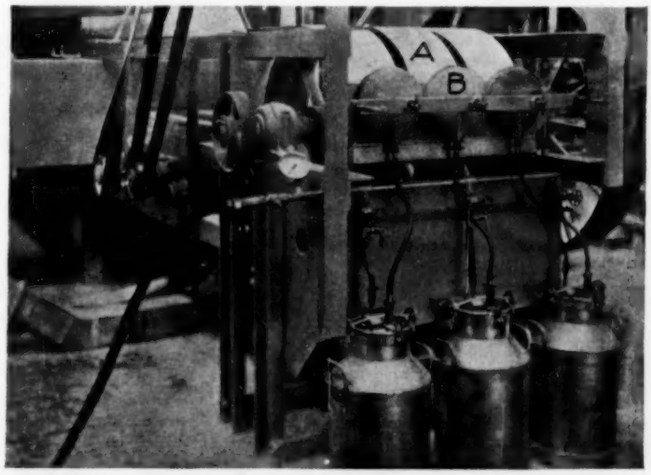
The instantaneous setting throughout the mass furthermore puts no limitation on the thickness of the gel and as the shrinkage must be proportional throughout, it becomes conceivable that with the use of so compounded latices and appropriate molds, seamless articles of different wall thicknesses can be produced. It has, for example, become possible to produce shoes with heels of comparatively heavy soles and thin walled uppers, by using molds, consisting of a shell and a core, and pouring the latex compound in the remaining cavities.

The instantaneous settings, however, have enabled us to produce as complicated goods as hollow articles, as, for example, play balls, rubber dolls, etc., in a single operation, the latex compound being placed in a given amount and concentrated in the mold, which then is slowly rotated at low speed solely to obtain an even distribution of the latex on the interior surface. After a pre-determined time or after having reached a given temperature, the compound will set to a coherent, plastic, microporous gel, which can be removed from the mold and dried. The industrial application of this process or processes has finally enabled us to produce direct from latex a variety of goods, which, so far, have been typical representatives of the "old routine work."

We have finally proved that latex can advantageously replace crude rubber if one makes intelligent use of the properties of this unique natural dispersion of rubber and takes the time to adapt engineering methods to its special properties. The first big step has been accomplished. Still more has to be done before latex will be an established commodity as raw material throughout the industry, but there is no reason why further development and increasing scientific knowledge should not bring us closer to our goal as time goes on.

A Powdered Rubber Machine

FORMED for the purpose of acquiring all patent rights to the de Schepper process for making powdered rubber from latex, the Rubber Powder Company, Ltd., 20 Copthall Avenue, London, E.C. 2, England, has conducted a series of tests with an experimental machine constructed for the company by Stork Brothers and Company, of Amsterdam, Netherlands. So successful were these tests that a number of additional machines are now being produced by the Amsterdam concern.



View of the powdered rubber machine built by Stork Brothers, Amsterdam. The figures indicate the following: A—belts; B—sprayers; C—cans of latex.

According to the Leather and Rubber Division of the Department of Commerce, the de Schepper process, which was partially described in the October, 1934 issue of THE RUBBER AGE, is a modification of the method used in the production of sprayed rubber. In the latter process latex

is poured in a steady stream on a swiftly revolving disk at the top of a superheated chamber, the resulting fine spray being dehydrated by the time it reaches the floor where the rubber, in small sticky granules, immediately adheres into a mass, usually pressed into blocks for shipment.

In the de Schepper process, latex is sprayed on a moving endless heated rustless steel belt where it forms large globules, differing from the sprayed rubber process where the spray is so fine that it resembles mist. The steel belt then passes through a heated chamber (90° C. to 120° C.). The chamber is 100 feet long and 6 feet high. The latex on the belt is dehydrated during the passage forming small globules of dry rubber. To prevent these globules from adhering to each other zinc stearate is sprayed on this rubber before it is removed from the belt. The proportion of zinc stearate is very low, ranging from 3 to 5%. Just before the steel belt returns to the point of departure (where the latex is sprayed on it) a revolving roller detaches the rubber, rolling it into small particles resembling very small tubular beads.

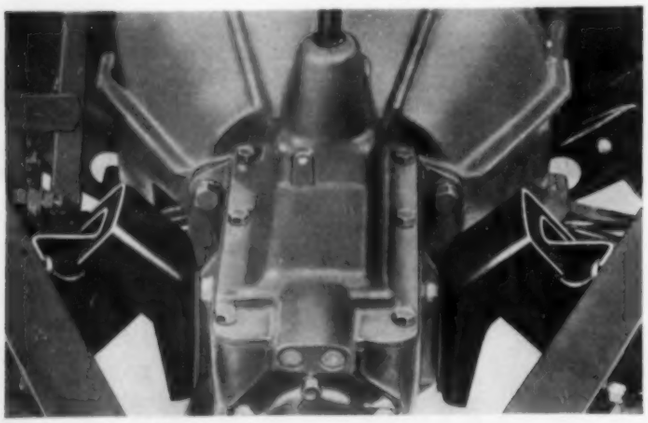
The daily capacity of the rubber powder machine is three tons. Its manufacturer recommends steam for the heating of the chamber. Rubber powder is shipped in cases either pressed into blocks of 50 lbs. per cubic foot or unpressed. When pressed into blocks it may readily be crumbled into powder. It is understood that the Rubber Powder Company, Ltd., is planning on enlarging its corporate size and entering into commercial sale of the machine.

Rubber in Packard Automobiles

SUPPLEMENTING the article on "Rubber in 1935 Automobiles" which appeared in the February, 1935 issue of THE RUBBER AGE is the following information relative to the use of rubber in models produced by the Packard Motor Car Company of Detroit. According to H. F. Olmsted, Packard Model One Twenty uses rubber in 310 different places without including the use of electrical wiring. A partial list of these uses in that model, together with the number of rubber parts used in each instance, follows:

Radiator harness support pad (1); front wheel support arm inner bushing (2); front wheel support upper bushing (2); torque arm bushing (2); front motor support (1); rear motor support (2); power plant snubber (1); vibration dampener on crankshaft (1); clutch release lever boot (1); front spring bumper (2); front spring rebound bumper (2); rear spring front spring bolt bushing (2); rear spring bumpers (2); muffler rear supporter (1); bumper grommets (4); brake hoses (3); master cylinder piston seals (1); master cylinder dirt seals (1); wheel cylinder piston seals (8); wheel cylinder dirt seals (8); gasoline tank filler neck grommets (2); horn bracket grommets (4); running board covers (2); pedal pads (2); pedal to floor board seals (2); steering wheel (1); steering gear column grommet (1); gear shift lever knob (1); water inlet and outlet hoses (3); fan belt (1).

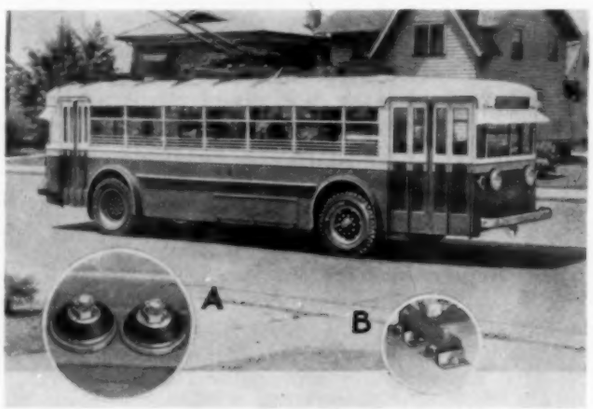
Front fender splasher skirt (2); foot pedal stops (1); rear shock absorber connecting link bushings (6); accelerator pad (1); rear brake cable guards (4); speedo cable guard (1); battery case, covers and insulators (1); tires (5); bonnet lower front corner pad (2); radiator ornament pad (1); tail lamp bracket (1); head lamp bracket pad (2); door bumpers (8); door check bumpers (4); windshield glass cushion (1); window and ventilator glass cushion (8); front floor mat (1); body bracket shims (22); windshield wiper blades (2); running board to fender space (2); fender to radiator shell spacer (2); rear trunk door weather strip (1); points where rubber compound is used between metal and wood contact (72); and points where tire tape is used between metal and metal contacts (68).



Rubber engine mounting used in Packard motor car models for 1935

Rubber Parts on Trackless Trolley

ANOTHER wedge in the campaign being waged by municipalities to eliminate unnecessary noises from city streets is found in the introduction of a new type of "trackless trolley," a bus which substitutes for trolley cars. The former type uses balloon tires instead of steel wheels and tracks, and noise potentials have been still further reduced by several new rubber applications.



Trackless trolley, above, uses biscuit type motor support (A) and channel-shaped vibration dampener (B).

One of these recently-adopted applications is a "biscuit type" motor support cushion vulcanized to brass-plated metal, a patented device of the Firestone Tire & Rubber Company. In the new trackless trolleys being manufactured by the Twin Coach Company, Kent, Ohio, the compressor unit is suspended by these mountings. Twelve more are used for carrying the trolley plate, to prevent noise from being telegraphed and resonated over the car roof. These "biscuits" eliminate noise, dispel vibration, and at the same time serve as the "third stage" of electrical insulation.

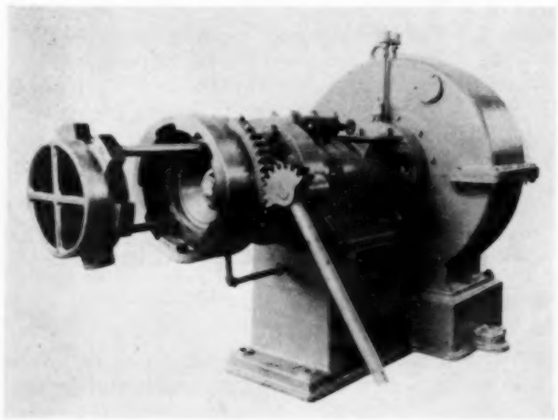
The patented "vibration dampener" is a unique mounting. Its applications include the motor cut-out switch, control group, brake controller, master controller and reverse unit. This mounting is a combination of rubber and metal units chemically vulcanized together. It dissipates shocks which otherwise might injure the complex equipment, and provides valuable electrical insulation.

The fenders of the new trackless trolley are also made of rubber by Firestone, fitting snugly into the fender wells and protruding only far enough to serve their purpose as mud guards.

New Equipment

Allen-Williams Rapido Strainer

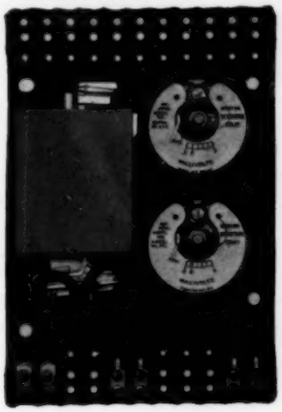
TERMED the Allen-Williams "New Rapido," the National Erie Corporation, Erie, Pennsylvania, has introduced a tubing, straining and insulating machine in which is incorporated several improved features. All parts subject to wear and strain are made from a special alloy electric furnace steel, while all moving parts have been made easily accessible. The cylinders are semi-steel and fitted with renewable nickel alloy cast iron bushings. Temperature controls for maximum efficiency at high speed are provided. Either standard or soapstone type water jacketed cylinder heads, threaded to suit all types of die equipment, are furnished for tubing. The drives are especially designed for tuber and strainer service and are guaranteed to handle full rate load in continuous service. A splash system is provided for lubricating gears run in oil. Flexible coupling with adequate capacity for con-



necting motor to drive is supplied as standard equipment. An important feature of the machine is the new quick opening end delivery head which permits the operator to change screens in less than three minutes. Data received from plants in which the "New Rapido" is installed show the following: the 10-inch strainer, equipped with Quick Opening End Delivery Head, operating at stock screw speed of 30 R.P.M., strains 1.25 gravity stock through screens made from .023" diameter wire, having width of opening .027"—an average of 3600 lbs. per hour, and 1.16 gravity reclaim stock—5000 lbs. per hour. The 8-inch machine, operating at a stock screw speed of 34 R.P.M. produces from 3000 to 3600 lbs. of strained stock per hour.

Weston Illumination Control Relay

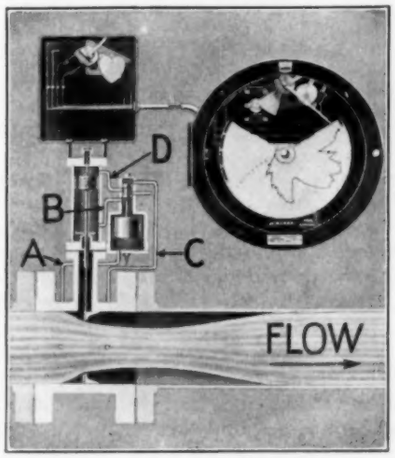
A NEW Photronic "electric-eye" control which turns lights on and off automatically to maintain a predetermined level of adequate illumination has been announced by the Weston Electrical Instrument Company, Newark, N. J. The desired "turn on" and "turn off" illumination values are simply set in advance on two independent scales, and at these values the Photronic Cell actuates a relay controlling the light circuit through a mercury switch. The Model 709 control is particularly applicable to industrial interiors. It turns off lights which might otherwise burn for a considerable length of time after the external light source has increased to an adequate value. The circuit is so designed that momentary shadows do not



affect the automatic control. For indoor use, the light collector containing the "electric eye" is directed at the location where illumination is to be maintained, and the electric impulse it sets up is carried by ordinary leads to the panel containing the relay and switch. Both the light collector and panel are also available in weatherproof housing for outdoor use controlling yard lights, electric signs and the like.

Elgin Isometer—New Flow Meter

UTILIZING a varying orifice, a new type of flow meter has been marketed by the Elgin Softener Corporation, Elgin, Illinois, termed the Elgin Isometer. A constant pressure drop is maintained in the new instrument by changing the orifice opening, the flow then being accurately determined by measuring the amount of orifice opening at any instant. According to the manufacturer the varying orifice principle of operation makes it possible to measure low rates of flow accurately down to as low as 2½% of the meter capacity. The complete Isometer consists of two parts: the Actuator and the Meter Unit. The



accompanying schematic diagram depicts how the movement of the orifice gate changes into an electrical impulse that can be registered by a meter. The upstream pressure enters the pilot through tube "A" beneath the piston and

causes the pilot piston to rise, permitting the upstream pressure to enter the main cylinder through tube "B" beneath the main piston. This raises the main piston and opens the orifice. The orifice will continue to open until the downstream pressure reaches the desired point, at which instant the pilot piston travels downward and shuts off the pressure under the main piston, the orifice opening being held in a fixed position. If the flow increases, the pilot piston again rises, admitting pressure again below the main piston and causes the orifice to open further. If the flow in the main pipe line drops off, the downstream pressure, which is transmitted to the top of the pilot piston through tube "C," will cause the pilot piston to travel downward, admitting pressure to the top of the main piston through tube "D," and opening a drip line venting the main cylinder at the bottom of the main piston. This causes the orifice to close until the required pressure drop again is established. With the pressure drop established, it is necessary only to measure the opening of the orifice. The vertical movement of the orifice gate is measured by changing the linear motion of the small stem to rotary motion. The rotary motion operates an electrical time contact device.

Bearing Appliance Closures

COMPLETE closures, finished and ready to use, for approximately 150 sizes of ball and tapered roller bearings in a number of sizes and types to meet many design combinations, have been made available to users of

anti-friction bearings by the Bearing Appliance Company, Ardmore, Pennsylvania. Bolt fastening dimensions have been established and for each group of bearings having similar diameters a number of parts, all having identically located holes, are provided. Fourteen sizes of cast iron covers for completely closing the bearing housings as well as open covers of various types are included in the line. Among the latter are covers carrying felts, covers with flingers and covers for the accommodation of standard leather or composition oil seals. Numerous shaft extension sizes can be utilized and the varying degrees of inside space offered permits mounting bearings with or without locknuts, in fixed or floating positions and with proper abutting shoulder diameters. A number of the parts are fitted with lubricant and cleaning openings eliminating the expense of these holes in the main housings. Data sheets showing detailed dimensions are procurable from the Bearing Appliance Company.

American Self-Operating Controller

THE self-operating temperature controller recently placed on the market by the American Schaeffer and Budenberg Division of Consolidated Ashcroft Hancock Company, Bridgeport, Conn., is made with a seamless two ply bellows as its main operating force. The capillary tub-

ing is protected by a spiral and braided armor. The adjustment is ball bearing to remove strains when making adjustments. The adjusting spring is of such length as to give a wide range of temperature adjustment. The new controllers are made for temperatures ranging from 20 to 475° F., and in sizes from ⅜ inch to 4 inch, inclusive. Additional details of this self-operating controller will be found in the March, 1935 issue of THE RUBBER AGE.

A Housewife Looks at Raincoats

(Continued from page 23)

streets that glistened like strips of shiny aluminum, under trees just beginning to bud their greenest, and by waving yellow blossoms and a pink tulip tree that had come out to dare the frost, I thought to myself, "How the world has changed!" Twenty years ago, my little classmates and I, each in raincoats as dark as our thoughts, would be creeping meekly and with dampened spirits to school on a day like this. Once there, we spoke in whispers, for the teacher was quite apt to have a rainy day disposition. And when we got home, mothers were likely to be lamenting into the telephone that something or other must be put off until the weather cleared. Thinking of all this, I parked my car downtown and looked out upon the colorful panorama of the modern rainy day.

A veritable parade was passing by. School girls, garbed in raincoats of crimson or wood green or blue or purple were laughing as they walked along the street. One smart outfit of brown and white checks was complete with tan galoshes and parasol. It convinced me that even rainy day fashions provide the ultra-smart with satisfying outfits. There were two white ones that passed—one a rough all-white material and the other white trimmed in blue. Even a silver rain coat and parasol were in the gay parade. A slim little sub-deb wore it; she might have been the very spirit of the silver rain that fell about her.

Here and there a young matron popped in and out of a grocery store. It was even fun to go marketing on a rainy day!

Endlessly the procession went on, against the soft silver grey sheets of spring rain—yellow and orange and red and green and blue and indigo and violet raincoats and capes—their colors making the lovely rainbow of a rainy day.

REVIEW SHELF

• Monthly Review of New Books, Pamphlets, Company Catalogs, Service Bulletins, House Organs, etc., Pertinent to the Industry

COLUMBIA CHEMICALS. Distributed by the Pittsburgh Plate Glass Company, Pittsburgh, Penna. 10 pp.

The importance of alkalis to industry is discussed in this little booklet distributed, primarily, to stockholders of the Pittsburgh concern which owns and controls the Columbia Alkali Company, well known manufacturers of Calcene and other products for the rubber industry. A chapter is devoted to "Users and Uses" of alkalis. A complete list of products manufactured by the subsidiary is part of the booklet together with a brief mention of each product and its relative importance to industry.

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PETROLEUM AND GASOLINE. Issued by the Bankers Economic Service, 91 Wall Street, New York City. $1.00.

Many developments affecting the petroleum and gasoline industry with the outlook for 1935 are weighed in this special survey just released. Five charts are included in the survey depicting the correlation of imports to exports, new supply to disappearance, and the seasonal trends of both products. According to the survey, which is printed in 4-page booklet form, the petroleum industry and its main products "now face a future of greater stability and solidity, as a result of recent and progressive developments."

•

THOU SHALT NOT KILL. Published by the Travelers Insurance Company, Hartford, Conn. 56 pp.

The worst automobile accident casualty toll ever experienced in the United States was recorded in 1934 when 36,000 persons were killed and nearly a million injured as a result of 882,000 personal injury collisions on streets and highways, with pedestrians accounting for 44% of the total fatalities. Detailed statistics giving the circumstances of these accidents are tabulated by the Travelers Insurance Company in this booklet. Humorous and dramatic illustrations throughout the booklet tend to remind the automobile driver of his responsibility when at the wheel.

•

LET IT RAIN. Issued by the American Nature Association, 1214 Sixteenth Street, N. W., Washington, D. C. 6 mimeographed sheets. 10c.

Prepared by Ernest A. Dench, these sheets describe the proper dress for hiking or camping in the rain. A list of clothing and accessories, including rubber rainwear and footwear, is included, together with brief descriptions of wearability based on actual testing conditions over a period of time. Hot weather conditions, and suitable attire, is also part of this survey.

•

INDUSTRIAL POWER TRANSMISSION. Prepared by the Mechanical Power Engineering Associates, 370 Lexington Avenue, New York City. 36 pp.

Treating current management problems from the standpoint of cost reduction in which mechanical costs have assumed major importance, this booklet is a practical analysis of some fundamentals of industrial power transmission. It discusses various production angles where power transmission plays a major or minor role in a question-and-answer form. It should be of pertinent interest to all factory managers and production superintendents.

•

INDUSTRIAL CABLE. Distributed by General Electric Company, Schenectady, New York. September, 1934. 128 pp.

Describing and listing all the standard types of insulated wire and cable that are used by industry for transmission, distribution and control, this catalog, printed in clear, concise style, devotes an entire section to rubber-insulated cable. In this section is contained a summary of the types of cable available and recommended applications of each type. Results of tests, both physical and electrical, conducted on various types of rubber-insulated cable, are also given.

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A GLOSSARY OF TERMS FOR RUBBER MANUFACTURERS. Prepared and distributed by the Stamford Rubber Supply Company, Stamford, Connecticut. 32 pp.

One of the handiest "rubber dictionaries" to be presented in a long time is this glossary of terms relating to rubber, its uses and manufacture. Practically all of the more common terms peculiar to rubber manufacturing will be found in this booklet as well as several not so well known. The booklet also embodies the advantages to be gained by the use of Factice. It has been prepared, primarily, for the practical rubber worker.

PRODUCTS OF U. S. I. Distributed by the U. S. Industrial Chemical Company, Inc., 60 East 42nd Street, New York City. 52 pp.

Intended to serve not only as a catalog, but also has a handy reference book this compilation of the products manufactured and sold by the U. S. Industrial Chemical Company is one of the most complete catalogs of its kind. Among the products listed in the catalog are ethyl alcohols, ansols, esters, ethers, estersols, and miscellaneous other products. The origin, specifications, and applications of each product are given together with valuable general information. Information pertaining to alcohol regulations is also contained in the catalog.

•

TYRE MACHINERY. Issued by Francis Shaw & Company, Ltd., Manchester, England. 80 pp.

Printed in three languages—English, French and German—this catalog has been prepared to illustrate the various types of machines supplied by the company for the manufacture of tires and tubes. It is replete with illustrations, there being little text other than full and complete captions describing each illustration. The captions, too, are printed in the three different languages. Every conceivable type of tire and tube machinery is included in the catalog.

•

REMOVE THE MENACE OF DUST. Distributed by the Air Appliance Division, U. S. Hoffman Machinery Corporation, 105 Fourth Avenue, New York City. 16 pp.

Adequately illustrated this booklet discusses the various diseases, damage and destruction caused by dust in industrial plants and the many types of apparatus made by the company to combat such conditions. The booklet describes both a permanent and portable method of installing Hoffman equipment for continuous use in combatting dust problems.

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CHEMISTRY IN THE SERVICE OF SCIENCE. (A reprint). By Dr. A. T. Lincoln. Published by The Chemical Foundation, 654 Madison Avenue, New York City. 30 pp.

Fifth in "The Deserted Village" series being published by the Chemical Foundation this latest booklet contains a discussion on the service of chemistry to apparently non-related subjects, such as astronomy, geology, agriculture, etc. It also contains a chapter on the cultivation of farm products as potential raw materials for the chemical industry. The idea behind this series of booklets is to urge the youth of America to turn to chemistry as a vocation on the basis that the industry needs "more good and great chemists."

•

A BEAM OF LIGHT. Distributed by the C. J. Tagliabue Mfg. Company, Park and Nostrand Avenues, Brooklyn, N. Y.

With the statement that "Tag Pyrometers bring to industry so many new advantages in recording, controlling and indicating temperatures that their full significance may be lost in their number" this pamphlet describes the many uses in which the photo-electric cell is incorporated in the company's pyrometers. Written in easily understandable style the pamphlet points out the number of features in Tag instruments intended for various recording, controlling and indicating purposes in industrial plants. Several attractive illustrations are included.

Editorial Comment

The Wagner Bill

THERE IS pending in the Senate a bill introduced by Senator Wagner of New York known as the Wagner Trade Disputes Bill, officially termed Bill No. S 1958. Organized labor has trained all of its available guns on the passage of this bill. We cannot find fault with the American Federation of Labor for expending all of its vast influence with regard to the bill for its passage would virtually make that organization a part of the United States Government, an alliance that would be doubly welcomed by labor and its friends. But there's more to it than that!

Hidden away in the many clauses of the Wagner Bill is one creating a new National Labor Relations Board with powers far exceeding the present board. Other clauses in the cleverly-worded bill would outlaw any organization of workers which the employer assists in even the slightest degree; prohibit legal defense of employers against labor aggression; establish the doctrine of majority rule so that if 51% or more employees vote for a certain type of employee representation the balance of the employees must accept the decision; and, most important to labor, definitely approves closed shop agreements by which an employer who enters into any agreement with a union must refuse employment to persons not members of that union, or in other words, a 51% majority of union workers can force the other 49% to become union members and contribute dues or gives them the option of quitting.

Think what a law of that nature would do! It would not only take the question of employer-employee relationship out of the employer's hands entirely, but would pave the way for utter domination of industry by the leading labor organization—the American Federation of Labor.

Note the reference to "company unions." We do not for one moment place all employee organizations on a pedestal. There are many so completely dominated by the employer that they are truly "company unions." But the Wagner Bill would outlaw *all* employee organizations—bar none. Organizations that have proved successful in their years of operation, such as the Goodyear Industrial Assembly, which even the United Rubberworkers Council approves of in part, would be obliterated to be replaced by union representatives.

Despite Senator Wagner's repeated protests that passage of his measure would create a labor dictatorship it is self-evident that it would really represent a Magna Carta, as it has been termed, for labor. It would unequivocally establish the American Federation of Labor at the head of a nation of closed shops. It would leave employees no other choice than to unionize themselves and contribute to the swelling fund of the A. F. of L. Yet, despite these apparent results of its passage, the bill is being seriously considered over the combined objection of American industry. *Cui bono?*

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Social Insurance

WRITING in the February 9 issue of *Today*, the new national weekly magazine, Paul W. Litchfield, president of Goodyear Tire & Rubber Company, stresses the importance of turning industrial attention to social or unemployment insurance, a topic often referred to in these columns. We heartily endorse Mr. Litchfield's statement that if social insurance is to work in a regime of competition such as exists today then only a program sponsored and enforced by the national government will do the trick. And Mr. Litchfield is in a position to know whereof he writes since the Goodyear Industrial Assembly has provided all sorts of insurance, ranging from age pensions to death benefits, for Goodyear employes. He strongly states that Goodyear itself could not possibly undertake unemployment insurance, and adds that not even the rubber industry could undertake it as a group of companies.

In placing the burden of unemployment insurance upon industry several points must be borne in mind, such as seasonal industries, regional shifts of production, decadence of old firms, and industrial obsolescence. As the Goodyear president states, "It is not because of good management that the food industry operates with such regularity, nor the fault of the building industry that it is so irregular in its activity." Yet in starting a national unemployment insurance program it would probably be best to collect uniform amounts from industrial plants regardless of their rates of operation over the years. Changes could be made in this policy as the program continued.

The Wisconsin Unemployment Compensation Act, which went into effect last July, puts the burden upon seasonal industries. Mr. Litchfield does not approve of such tactics, but suggests that it might be wise to have variation in state practices "if for no other reason than to get them to try different plans."

Another point stressed in the article is of paramount importance. Mr. Litchfield urges that employes should definitely contribute to any planned fund, irrespective of the amount of that contribution, although he suggests a fifty-fifty plan as best, since making the employee aware that he is keeping the fund solvent will add to the eventual success of the plan for apparent reasons. There are many more angles discussed by Mr. Litchfield in the article, but those outlined above, in which we concur, are the more pertinent points at issue.

CURRENT • NEWS
of the Rubber Industry

APRIL, 1935

Labor Crisis Reached in Akron Rubber Factories As Union Locals Cast Strike Votes for Action

Union Request for Recognition Is Denied by Goodyear, Goodrich and Firestone—Companies and Union Can Reach No Agreement on Holding of Employee Elections

CLIMAXING two years of labor maneuvers rubber unions in Akron affiliated with the American Federation of Labor are moving rapidly toward a strike against the Goodyear, Goodrich and Firestone companies. As this is being written (April 4) the Goodyear local has already conducted a strike vote at which an estimated 3,000 ballots were cast with strike votes called for April 7 by the Goodrich and Firestone locals. The result of the Goodyear vote was not to be made public until the latter two locals had cast votes, but it is understood that the votes were far in the majority for an immediate strike planned on or about April 10. Of the approximate 35,000 workers in the three rubber factories the American Federation of Labor claims a membership of 22,000 while the rubber companies admit to only 2,500. At present only two factors will prevent the strike—permission to permit employees of each factory to vote for their preferred bargaining agency under government supervision, or immediate passage of the Wagner Trade Bill.

After twice being refused by the Rubber Manufacturers Association with regard to collective bargaining the United Rubberworkers Council decided to approach rubber manufacturers individually, starting with the Akron leaders. To that end the locals of Goodyear and Goodrich approved tentative working agreements to be presented to their respective companies on March 10, the agreements having been drawn up by the executive board of the parent union organization. These agreements called for union recognition, seniority rights, a 30-hour week and other demands including the establishment of a working basis for further negotiations between company and union officials. A similar agreement was approved by the Firestone local on March 17.

The Goodyear local presented its demands to Goodyear executives on March 20 as the first step toward recognition. In accepting the proposed agreement from the union committee Vice-President Slusser stated that the company had never signed any agreement with a labor organization in its 37 year history feeling that "we can do more through cooperation with our employes." He also pointed out at the time that Goodyear's present average wage for all factory employes, including all classifications, is 94.8 cents per hour, the "highest paid in any industry."

On March 22 Goodyear flatly informed the committee representing the Goodyear local that it refused to sign the proposed written agreement. A formal statement issued by the company defining its position stated that "we are convinced that only a very small number of Goodyear employes are members of the organizations you represent . . . it is apparent that the agreement you propose is intended to apply to all of Goodyear's Akron employes . . . the negotiation by Goodyear of an agreement of the character submitted by you would, in our judgement, be a breach of faith with Goodyear employes who more than 15 years ago voluntarily adopted a plan of collective bargaining."

After receiving the Goodyear refusal from Mr. Slusser the union committee requested an interview with Paul Litchfield, president, which was granted and held on March 26. The result of this interview was a repetition of the company's refusal to enter into a signed agreement with the Goodyear local. Complete divergence between union leaders and Mr. Litchfield over the means of obtaining higher wages in the rubber industry was reported, although the wage angle is not concerned to any appreciable degree in the current dispute.

Hurl "Spy" Charges

Both the Goodrich and Firestone locals of the A. F. of L. presented their claims, similar in all respects to those submitted to Goodyear officials, to their respective companies on March 25. While these demands were being presented Coleman C. Claherty, president of the United Rubberworkers Council, issued a formal statement accusing "two rubber companies" of hiring "spies and stool pigeons" from the National Investigation Corp., Youngstown, Ohio and the Investors Survey Service, Inc., New York City. (The New York phone book does not list the name of the latter company). These charges were derided by the various Akron rubber manufacturers.

Answering the petitions of their union locals both Firestone and Goodrich joined Goodyear in complete refusal to enter into any signed agreements with the A. F. of L. affiliates, announcing their decision on March 27. In making the Firestone decision public W. R. Murphy, company labor superintendent, declared: "It is a matter of record before the National Labor Relations Board that the union (Firestone local) has only 600 or 700 members. Is there any merit or justice in that number forcing their will on 10,000?" These figures were denied by union representatives. In an open letter sent to union heads T. G. Graham, vice-president of Goodrich, stated that "there is nothing to be gained for Goodrich employes under your proposed agreement" and for that reason, among others, the company turned down the union plan.

Based on the refusals of Goodyear, Goodrich and Firestone to enter into signed agreements the United Rubberworkers Council, on March 27, the date the latter two companies announced their decisions, ordered the taking of a strike vote by the three locals involved, the Goodyear vote being set for March 31, Goodrich and Firestone votes for April 7.

Immediately following this union announcement the managements of both Goodyear and Goodrich held employee votes by secret ballot to determine the sentiment of their workers in connection with the impending strike. Goodyear workers were asked to check whether they were for or against a strike. The tabulation of these votes was announced on March 29. Goodyear workers voted

Late Strike Notes

Justice James M. Proctor, of the District of Columbia Supreme Court, issued an order on April 5 requiring the National Labor Relations Board and the National Industrial Recovery Board to show cause by April 9 why they should not be enjoined from interfering in the labor dispute at the Firestone factory at Akron. The order carried a temporary injunction with it preventing any form of boycott.

Goodrich refused to permit either an employee election or to resume labor negotiations as requested by Ralph Lind.

Balloting on the strike issue was started on April 7 by the Goodrich and Firestone locals. Votes were to have been tabulated on April 10.

11,516 to 891 against a strike. 6,019 Goodrich employes voted against a strike, while 2,015 voted "no" on the question—Would you remain at work in the event of a strike? Approximately 90% of 13,846 Goodyear employes eligible to vote cast ballots. Union leaders attacked these votes, and the results reported, on the grounds of intimidation of workers, among other charges.

A similar vote conducted at the Firestone plant by the Employes' Conference Plan, termed a "company union" by the American Federation of Labor, announced on April 4, showed 7,162 workers opposed to a strike and 1,659 in favor of one, or more than 80% of all employes opposed.

Goodyear Local Holds Vote

As per the order issued by the United Rubberworkers Council the Goodyear local started secret balloting on a strike vote on March 31. Votes were accepted over a four-day period, and it is estimated that 3,000 ballots in all were cast. Although balloting was completed by April 3, and the results tabulated, they were not made public pending the strike votes which were to be conducted by the Goodrich and Firestone locals on April 7. However, it is reported that members of the Goodyear local were strongly in favor of an immediate strike, and voted accordingly. In the event that the Goodrich and Firestone locals favor a strike, a strong likelihood, then strikes will be called against the three rubber factories involved at the same time within a few days after April 7, the date of the vote.

Anticipating the strike Goodyear, Goodrich and Firestone have already made it clear that they intend to operate their respective factories. Barbed wire has been strung along fences surrounding the factories. Windows have been covered with iron bars and heavy screens. Heavy supplies of tear gas have been brought into the factories, it is understood, and company guards have been given special courses of instruction. Special telephone lines have been run from company offices to police headquarters. It is reported that more than $25,000 has been spent in pre-strike preparations.

Another result of the taking of strike votes by the rubber locals has been the deputizing of approximately 1,000 special agents by Sheriff James Flower, of Akron, of which total some 850 are Goodrich, Goodyear and Firestone employes picked by the companies to be sworn in. These deputies are given daily drills and detailed instructions. Many of them have been armed with tear gas, revolvers and clubs. It has been reported that the tire companies have taken out $10,000 insurance on each member of their company guards.

A full page advertisement in the March 30 issue of the *Akron Beacon Journal* carried the statement: "We grant to every man the right to strike, if that is his wish. We likewise demand, for every man whose desire it is to continue his work, that no one shall, by force or threats, interfere with his exercise of that right." The statement was signed by prominent business and professional leaders of Akron and was intended to serve as a warning to both labor and rubber leaders that the City would not tolerate turmoil. The cooperation of union local officials in preventing disturbances at the expected picket lines was also solicited by Sheriff Flower.

According to Ralph Lind, regional labor board director of Cleveland, and other executives close to the situation, there is a possibility that the strike can be avoided (if not already too late) by the rubber companies permitting government-supervised election of employee representatives in each of the three factories involved. Goodyear consented some time ago to such an election but insisted it be held on Goodyear property, while the Goodyear local insists it be held in some other location.

Goodrich and Firestone executives claim they cannot agree to such elections at this time in view of the fact that both are awaiting a legal decision on the right of the National Labor Relations Board to order such elections, which it did late last year. This decision is expected to be rendered within the next several weeks by the United States Circuit Court of Appeals, sitting in Cincinnati.

Another possibility of averting the strike (again if not too late) is the immediate enactment into law of the Wagner Trade Disputes Bill which would amplify the collective bargaining guarantees of the Recovery Act, would establish a permanent national labor relations board of three members to supervise settlement of labor disturbances, and which would, according to its interpretation, outlaw company unions of all kinds. Manufacturers are definite in their statements that passage of this bill would make the American Federation of Labor virtually a governmental agency with legal powers. There is strong opposition to the passage of the bill, but reports indicate that it will be eventually enacted with severe amendments.

It is surprising that the only move made by a governmental agency in the Akron situation, which is said to being closely watched in Washington, is the move of the National Labor Relations Board which rendered a decision on March 30 to the effect that the Firestone company had violated Section 7-A of the Recovery Act by interference with its employee organization (the Employes' Conference Plan) and called for compliance within six days of the decision. Firestone executives continue to deny that the Board has the authority to recommend removal of its "blue eagle" and have indicated that the company will not change its policy of dealing with its employee organization.

Companies Ready for Strike

It is stated on good authority that Goodyear, Goodrich and Firestone do not fear a strike at this time. Tire inventories have been piled up in the last few months and a five-month supply is on hand. Shipping activities at the factories were intensified all during the month of March in anticipation of labor trouble. Reports have it that Firestone shipped 400 carloads of tires on one Sunday late in the month.

Although the General Tire & Rubber Company is not involved at present in any strike threat by its workers the company has taken various precautions against damage to its property. Special floodlights have been installed at strategic points around the plant and other measures adopted. There is a strong possibility that the Ohio Rubber Company, at Willoughby, may soon have a repetition of its recent 11-day strike which was marked by violence. The union local has charged that the company has failed to put all the strikers back to work as promised and has given jobs to non-strikers.

FEBRUARY CONSUMPTION DROPS 8% BELOW JANUARY

Consumption of crude rubber by manufacturers in the United States for the month of February amounted to 43,187 long tons, which compares with 47,103 long tons for January, 1935. February consumption shows a decrease of 8.31% under January, 1935, and 6.4% over February, 1934, according to statistics released by the Rubber Manufacturers Association. Consumption for February, 1934, was reported to be 40,609 long tons.

Imports of crude rubber for February were 35,383 long tons, a decrease of 15.9% below the January figure of 42,059 long tons, but was 14.0% above 31,032 long tons imported in February, 1934.

Total domestic stocks of crude rubber on hand February 28th were estimated at 335,007 long tons, which compares with January 31st stocks of 346,084 long tons and 358,681 long tons on hand February 28, 1934.

The participants in the statistical compilation report 42,969 long tons of crude rubber afloat for the United States ports on February 28th, compared with 42,066 long tons afloat on January 31, 1935, and 53,063 long tons afloat on February 28, 1934.

February reclaimed rubber consumption is estimated to be 9,374 long tons; production, 10,072 long tons; and stocks on hand, February 28, 1935, 22,989 long tons.

TIRE SHIPMENTS GAIN 17.8% OVER DECEMBER

Shipments of pneumatic casings for the month of January, 1935, amounted to 3,662,615 casings, an increase of 17.8% over December, 1934, and 13.7% above January, 1934, according to statistics released by the Rubber Manufacturers Association, Inc.

Production of pneumatic casings for January, 1935, was 4,626,473 casings, an increase of 22.4% over December, 1934, and 18.0% above January, 1934.

Pneumatic casings in the hands of manufacturers on January 31, 1935, amounted to 10,397,667 units, an increase of 10.0% above stocks on hand December 31, 1934, and 7.4% over stocks on hand January 31, 1934.

The actual figures are as follows:

PNEUMATIC CASINGS

	Shipments	*Production*	*Inventory*
Jan., 1935	3,662,615	4,626,473	10,397,667
Dec., 1934	3,108,552	3,778,418	9,454,985
Jan., 1934	3,222,398	3,921,587	9,684,389

Skinner Will Move Factory

Skinner Tire & Rubber Company, Dayton, Ohio, will move its factory from that city to Springfield within the next month or two where it will occupy the plant formerly used by the Victor Rubber Company which it purchased recently. Reason given for the move was said to be the need for more manufacturing space which the new factory affords. The company employs about 80 people.

Philips-Baker Gets Contract

Philips-Baker Company, Providence, Rhode Island, was awarded a contract valued at $50,178 for rubber footwear to be supplied to the United States Army on April 2. The award was part of a group of contracts for footwear amounting to $858,077.

CONTINUATION OF CODE HINGES ON LEGISLATION

Continuation of the rubber manufacturing code, which expires on June 30, hinges almost entirely on recovery legislation to be enacted within the next few weeks, particularly labor legislation, according to a survey recently conducted by the Recovery Administration soliciting the opinions of executives of major enterprises in the rubber industry.

According to a consensus of the opinions made in the survey the industry is inclined to go along with its code after June 30 for two important reasons, the first of which is the fear that if the code for the rubber industry were to be abruptly terminated in June, veritable chaos would prevail in marketing operations. During the past year and a half, it is pointed out, the industry has grown accustomed to standardized marketing practices. If the code were to be surrendered, many of these practices, such as open price filing, would have to be discontinued. If the N. R. A. were to be discontinued the industry would be faced with the possibility of prosecution under the anti-trust laws because of its efforts to co-operate in solving marketing problems, it is **conceded.**

In the second place, executives anticipate that the Administration may be willing to make some concessions to secure the support of industry for the NRA. With the prospect of a national election next year, it is believed that the Administration cannot afford to abandon the Recovery Act experiment. On the other hand, the fact that the Government must attach so much importance to securing business support for the NRA makes it extremely inadvisable for large companies to refuse to support code activities.

A refusal to cooperate on the part of business, it is pointed out, might cause the Administration to adopt a severely punishing attitude toward those concerns that refused to support the NRA.

Another point brought out by the survey is the fact that rubber executives regard the recent reorganization of the National Industrial Recovery Board, which provides for equal representation of organized labor with industry, merely as a temporary phenomenon. They do not believe that the reorganization signifies the domination of the recovery program by labor, nor that it signifies a drastic change in code administration if the recovery act is extended, as it probably will be.

However, rubber executives point out that the current feeling to continue under the code after June 30 is dependent entirely upon legislation in the immediate future, particularly depending on the outcome of the Connery and Wagner bills. The former bill seeks to require equal representation of labor and industry upon code authorities. Executives feel that inasmuch as the code authorities are concerned with trade problems of industry rather than with labor then the latter has no place on the governing boards.

Feeling with regard to the Wagner Trade Disputes Bill runs much higher. Rubber executives, according to the survey, have voiced definite decision to surrender the industry's code after June 30 if this bill, in its present form, is enacted into law. It is the firm belief of the larger manufacturers that enactment of this bill will result in increased labor friction to a point where the industry would be unable to secure any support for a code of fair competition under the Recovery Act.

It should be pointed out that the various opinions expressed in this survey represent that of the major rubber companies. Many of the smaller concerns are known to be inalterably opposed to extension of the code in any form. However, it is certain that the major manufacturers will favor retention of the code after its June 30 expiration date providing labor legislation does not prove to be too much of a weight to carry.

$350,000 Worth of Dolls

Hugo Baum, president of the F. & B. Doll Company, of New York City, gladdened the hearts of rubber manufacturers in Akron on March 12 when he placed an order with several of them for a combined total delivery of $350,000 worth of rubber dolls. According to Mr. Baum, the rubber dolls introduced by his firm last year under the F. & B. trade-name, which are adorned with diapers, sold to the tune of some 300,000 in department stores. The company anticipates a 50 per cent sales increase on the rubber dolls in 1935.

New Kelly-Springfield Plan

Spruille Braden, chairman of the committee for holders of $6.00 preference stock of the Kelly-Springfield Tire Company, advised stockholders on March 27 that the committee is prepared to accept deposits of stock, having complied with the requirements of the Securities Act. According to Mr. Braden the holders of common stock no longer have any equity in the company and the substantial expenses and operating loss now being incurred by the company must come out of the remaining equity of the preferred stock. It is understood that when sufficient stock has been deposited with the committee headed by Mr. Braden a new plan of reorganization will be presented to the courts. The Kelly-Springfield receivers recently reported that the company sustained a net loss of $851,906 for the year of 1934.

Adopting Four-Day Week

With the introduction of season production curtailments several hundred tire department workers in Akron rubber factories have been returned to a four-day week. Tire builders in the heavy duty tire department at Firestone have been cut to 5½ hours per day. The manufacturers have strongly denied any intention to layoff workers in wholesale groups as per consistent rumors, claiming that layoffs were being held down to a minimum. Tire factories in Akron were recently operating on 24-hour per day schedules in order to increase inventories preparatory to a busy selling season.

Exhibit Goodyear Products

A wide variety of rubber products produced by Goodyear Tire & Rubber Company were exhibited last month in one of the boardwalk windows of the DuPont Exhibit at Atlantic City which is permanently maintained. Among the Goodyear products on view were tires for all types of cars, buses and trucks, tubes, fan belts, garden hose, and other rubber products. An explanatory sign pointed out that Grasselli chemicals are used in the manufacture of all the rubber products on exhibition.

ACCUSE CODE AUTHORITY OF FIXING HOSE PRICES

Based on charges made before the Senate Finance Committee on April 1 the Federal Trade Commission announced on April 2 that it was preparing a complaint against the Rubber Manufacturers Association, code authority for the rubber manufacturing industry and seventeen major units of the industry, on charges of price fixing and other unfair competitive methods in connection with the sale of fire hose. The pending complaint is the first on record charging a code authority with illegal activity.

According to the report submitted by Harry A. Babcock, attorney for the Federal Trade Commission, a ten-day investigation was begun on March 6 into the practices of members of the RMA based on complaints of fixed prices filed by various consumers including Mayor LaGuardia of New York City. Mr. Babcock, who conducted the investigation, claimed to have found that "members of the mechanical rubber goods industry were fixing prices and were going further than permitted by their code." He further alleged that the fixing of fire hose prices lifted the cost of the hose from 23 to 34 cents a foot in October, 1932, to more than 78 cents a foot in 1934.

In his report Mr. Babcock recommended that a Federal Trade Commission complaint be issued against the Rubber Manufacturers Association and several of its specified officers, and seventeen rubber manufacturing companies, i.e. Acme Rubber, American Rubber Mfg., Boston Woven Hose & Rubber, Cincinnati Rubber Mfg., Continental Rubber Works, Goodrich, Goodyear, Hamilton Rubber, Hewitt Rubber, Home Rubber, Manhattan Rubber, Mercer Rubber, Quaker City Rubber, Republic Rubber, Thermoid Rubber, U. S. Rubber and Whitehead Brothers.

According to latest reports the complaint against the Rubber Manufacturers Association will be issued shortly calling upon the Association to appear before the Federal Trade Commission as the Code Authority for the Rubber Industry. In the proceedings to follow, treated in the form of a court case, the RMA may present a defense against the charges made. It also has the right to appeal to the courts in the event an adverse decision is finally rendered.

Later News: On April 6 the Federal Trade Commission filed a formal complaint against two NRA Rubber Code Authorities and the seventeen rubber manufacturers listed above, at Washington, D. C. The two code respondents named were the Rubber Manufacturers Association, a corporation, and A. L. Viles, J. D. Lippman, O. C. Pahline, A. B. Newhall, F. D. Hendrickson, R. F. Drake, Wm. Lichtenstein, P. B. Felix, F. Thatcher Lane, W. L. Finger, members and officers of the Code Authority for the Rubber Manufacturing Industry; and J. H. Connors, H. N. Young, C. D. Garretson, A. D. Kunze, Hamilton Abert, members and officers of the Division Code Authority for the Mechanical Rubber Goods Division of the Rubber Manufacturing Industry.

The formal complaint charged that the respondents named "established a boycott and refused to sell goods to any wholesaler or retailer who failed or refused to quote or sell at prices as fixed under the alleged agreement, combination and conspiracy." All of the respondents were given until May 10 to show cause why they should not "cease and desist" from the alleged violations charged in the complaint.

An additional charge accused code members of "acting under color of office" and "employing pretended authority."

RUBBER GROUP MEETINGS ARE HELD AND PLANNED

The various groups of the A.C.S. Rubber Division have held and will hold interesting sectional meetings during April and May. The Spring meeting of the New York Group has been dispensed with, members participating in the two-day session of the Rubber Division on April 22 and 23 at the Hotel New Yorker in conjunction with the 89th meeting of the Society. Members of this group will also act as hosts to out-of-town members and guests attending the annual meeting. (Full details of this meeting will be found elsewhere in this issue).

Akron Rubber Group

W. B. Wiegand, research director of the Binney & Smith Company, was scheduled to address the Akron Rubber Group on April 12 at the Akron City club on the subject of "A Trip to the Far East." The business section of the meeting was to have been devoted to the election of officers, a full report of which will be made in a later issue. The usual entertainment program was also scheduled for the meeting. H. A. Hoffman, 1799 West Market Street, Akron, is secretary of the group.

Boston Rubber Group

The next meeting of the Boston Rubber Group will take place at 6:30 P.M. on May 17 at the University Club, 40 Trinity Place, Boston. Mr. C. E. Maynard, factory manager, Fisk Rubber Corporation, will speak on "Machine and Process Development." A second speaker will be Mr. Peter P. Pinto, general manager of THE RUBBER AGE, who will deliver an illustrated address on "Strange Patents." Tickets and reservations may be secured from the secretary of the group, W. J. R. Hauser, Heveatex Corporation, Melrose, Mass.

Chicago Rubber Group

H. A. Winkelman, temporarily of the Marbo Products Corporation, is scheduled to discuss "New Developments in Rubber Research" at the next meeting of the Chicago Rubber Group at the Hotel Sherman on Friday, May 10. According to Secretary Lewis additional program features are being planned and will be announced shortly. Dinner in the College Inn of the Hotel Sherman generally precedes the meeting of the group.

Los Angeles Rubber Group

The annual Spring golf tournament of the Los Angeles Rubber Group will be held on April 20 at a course shortly to be selected. A meeting has been set for some time in May at a date to be announced later at which R. B. Stringfield of the University of Southern California will deliver an address on "Plastics."

Rhode Island Rubber Club

The Rhode Island Rubber Club was scheduled to hold a meeting in the auditorium of the National India Rubber Company, Bristol, Rhode Island, on April 11 featuring a buffet supper, a smoker, boxing matches, and vaudeville entertainment. In addition to these events several valuable prizes were to have been distributed. L. D. Walker, of the Collyer Insulated Wire Company, Pawtucket, is secretary of the group.

Accident Figures

The annual safety survey recently completed by the Travelers Insurance Company, of Hartford, Conn., indicates that tire blow-outs were responsible for wrecking 7,740 motor cars during 1934 in this country. Skidding caused even greater damage resulting in 21,330 accidents, of which 530 ended in fatalities. Automobile accidents last year caused 36,000 deaths and 945,000 injuries, according to the survey. The figures bear out the recent assertion of President William O'Neil, of General, that tires on one out of every three cars now in use are economically unserviceable and should be replaced.

Fostoria Rubber May Move

Negotiations are being conducted between officials of the Fostoria Rubber Company, Fostoria, Ohio, manufacturers of rubber gloves, and W. W. Reed, president of the Chamber of Commerce of Kent, Ohio, with regard to the possibility of the former concern moving to Kent and occupying the factory formerly used by the Eclat Rubber Company. It is understood that Fostoria Rubber is ready to move to Kent providing the local Chamber of Commerce bears the expense of making the necessary alterations to the Eclat Rubber building and the expense of moving the machinery from Fostoria.

TRENTON NEWS

The Vulcanized Rubber Company, Morrisville, Pa., recently held its annual election at the New York office and re-elected the following officers; President, Stanley H. Renton; Vice President and Works Manager, H. J. Kappler; Vice President and General Sales Manager, D. D. Smithyman; Secretary, John J. Noble; Treasurer, Hugh A. Ross. The directors were also re-elected.

Quennard Latex Products Corp., 115 Frelinghuysen Avenue, Newark, N. J., has been chartered at Trenton, with $50,000 preferred and 10,000 common shares, of no par value. The company will manufacture rubber boots, shoes, raincoats and other products. George H. Quennard, Morristown, N. J., and George Rosendale and S. C. Whitbeck, both of 125 William Street, New York City, are named in the incorporation papers.

Seventy-five executives and general office employes of the Thermoid Company, Trenton, have moved into new quarters in the building which the company recently purchased from the Roller Bearing Company of America, opposite the rubber concern's main plant. In addition to the executive staff the automotive, mechanical, export and manufacturers' sale, accounting, cost, order and billing departments were also moved to the new quarters. Several other departments remain in the old building. A modern cafeteria for employes has been established in the new building. The Woven Steel Hose & Rubber Company, a subsidiary of Thermoid, will shortly also be moved into the newly acquired property with the research laboratory and engineering division. A large part of the plant will be used by the Thermoid Textile Company, for the manufacture of carpet.

U. S. RUBBER OBSERVES 25TH PLANTATION YEAR

The year 1935 marks the observance of the 25th anniversary of the founding of the Far Eastern rubber plantations by the United States Rubber Company, said to be one of the most successful foreign enterprises ever pioneered by an American manufacturer.

Starting in 1910 by planting 1,753 acres with 192,830 trees, U. S. Rubber has steadily developed and expanded its holdings until today it owns and operates 11 separate plantations embracing 98,847 acres planted with 10,873,170 trees, not to mention 34,517 additional acres still to be planted. Six of the plantations are on the Malay Peninsula and five are on the east coast of Sumatra.

Another picture of the development of the plantations is reflected in production figures. Crude rubber output per year at five-year intervals tells the following story: 1915—1,043,516 pounds; 1920—13,112,918 pounds; 1925—19,670,033 pounds; 1930—36,619,876 pounds; 1934—50,985,962 pounds. Incidentally, last year's production was more than three times as much as the combined output of all other American rubber companies, according to U. S. Rubber. The total from 1910 through 1934 reached 470,237,463 pounds.

As early as 1914 the nucleus of a research department was started in the Far East and two years later the department assumed the status of an accredited scientific organization. Until that year field experiments with rubber trees had been conducted with a hit-or-miss type of accuracy. Mathematical and statistical methods of laying out and interpreting field experiments, although fairly well developed for annual agricultural crops in Europe and America, had not been applied to rubber tree experimentation.

Since 1916 the United States Rubber Company has been actively engaged in developing types of crude rubber especially adapted for its needs. One of the most important developments along this line is sprayed rubber. Another development of importance came from the company's pioneering work with latex. As long ago as 1922 U. S. Rubber made a bulk shipment of latex in a steamer tank, and today it imports from 400,000 to 500,000 gallons monthly. The future possibilities of manufacturing direct from the liquid latex are unbounded. Between 100,000 and 130,000 gallons of latex are used each month in the company's tire plant at Detroit.

Tagliabue Opens New Branch

C. J. Tagliabue Manufacturing Company, Brooklyn, New York, manufacturers of a diversified line of recording and controlling instruments for the rubber industry, has opened a branch factory at 1916 Jackson Street, Dallas, Texas, to replace the branch formerly at Shreveport, Louisiana, which was recently closed. A. G. Koenig will be in charge of the new branch, the prime function of which will be repair work. Adequate stocks of Tag instruments will also be maintained at the Dallas headquarters.

Revertex Corp. Moves

The Revertex Corporation of America is moving its New York offices from 40 Rector Street to 80 Broad Street on April 15. The telephone number of the new offices is BOwling Green 9-5523.

Names in the News

HENRY C. HARPER, of Charlotte, N. C., has been appointed advertising manager of the Goodyear Tire & Rubber Company, Akron, succeeding C. T. HUTCHINS who recently resigned. Thirty-nine years of age, the new advertising manager has been with Goodyear since 1917.

JOHN W. THOMAS, president, Firestone Tire & Rubber Company, Akron, has been renamed chairman of the board of directors of Akron University.

H. J. ZIMMERMAN, general traffic manager, B. F. Goodrich Company, Akron, delivered a report on "The Outlook for Rubber Products Shipping" at a meeting of the Great Lakes Regional Advisory Board on March 27 at Cleveland.

H. S. KARCH, connected with Goodyear for the past seven years, has been appointed chief chemist for the India Tire & Rubber Company, Mogadore, Ohio. He began his new duties on March 1.

EDWARD D. VIERS, supervisor, truck tire building department, Goodyear Tire & Rubber Company, Akron, began his thirty-sixth year of service with that company on March 22. He joined Goodyear on March 21, 1900, as a bicycle tire builder.

K. D. SMITH, technical superintendent, tire division, B. F. Goodrich Company, Akron, discusses "Twelve Rules for Tire Health" in a current issue of the American Legion Monthly.

FRANZ D. ABBOTT, formerly with Goodyear, has been made technical superintendent of the Ohio Rubber Company, Willoughby, Ohio.

R. W. FAUCETT, representative of the Firestone Tire & Rubber Company in India, is now in this country on a furlough and may be reached at the Akron factory.

H. A. FLANNERY was placed in charge of the Engineering Department of the Goodyear Tire & Rubber Company, Akron, on March 25. He has been with the company since 1917 and up until recently was general superintendent of the Goodyear plant at Wolverhampton, England.

JOHN LICATA, for many years a salesman of industrial naphtha, has been appointed sales manager of the Anderson-Prichard Oil Corporation, Oklahoma City, Oklahoma. He will maintain headquarters in Akron.

EARL GULICK, superintendent of the Canadian Goodrich Company, Ltd., Kitchener, Ontario, visited the Akron factories for a series of conferences, last month.

HARRY A. ARTHUR, president, American International Corporation, has been elected a director of the Fisk Rubber Corporation, succeeding WILLIAM B. STRATTON, recently resigned.

BURGESS DARROW, Manager, Development Division, Goodyear Tire & Rubber Company, Akron, completed 20 years of continuous service with the company last month. His total service at Goodyear is over 23 years.

HERMAN P. SCHULTZ was named sales manager of the Republic Rubber Company, Youngstown, Ohio, on March 20. He has been connected with the sales department since 1929 and has worked with the company since 1922 in various capacities.

SUEKICHI NAKAGAWA, president of the Yokohama Rubber Company, Ltd., Yokohama, Japan, was a visitor at Akron last month for a series of conferences with Goodrich executives. He was to have remained in Akron for several weeks.

J. C. RUTHERFORD, formerly advertising manager of the Pennsylvania Rubber Company, Jeannette, Penna., has joined the Liberty Show Printing Company of Pittsburgh.

HOMER EASTERDAY was appointed Eastern division manager for the Anderson-Prichard Oil Corporation, Oklahoma City, Oklahoma, replacing BRUCE C. DODD, recently resigned. The new executive has been associated with the rubber industry for the past eleven years and will make his headquarters at the Akron office of the company.

GEORGE J. WELGE, tire design, Goodyear Tire & Rubber Company, Akron, sailed for the Union of South Africa last month where he will act as special representative. He will be located at Durban.

H. V. BROWNE, manager, office standards, B. F. Goodrich Company, Akron, has been named to act as direct representative of the director of the Ohio government survey now under way.

R. A. MERTZ, factory manager, Ohio Rubber Company, Willoughby, Ohio, was one of the speakers at a dinner at the Willoughby Restaurant on March 21, tendered as a testimonial to those who were active in preserving peace during the recent strike.

E. V. CARLQUIST, formerly advertising manager of the Armstrong Cork Company, has joined the Thermoid Rubber Company, Trenton, N. J., in a similar capacity.

CHARLES WINANS, research chemist of the Goodyear Tire & Rubber Company, Akron, was elected president of the newly-organized Akron University Alumni Chemists Club on March 22.

J. C. SKINNER, president, Skinner Tire & Rubber Company, Dayton, Ohio, won an award of $1,323.85 from the Government last month as a refund on excessive tax paid to it. The refund was first awarded Mr. SKINNER by the Dayton Federal Court and a Government appeal was dismissed by the U. S. District Court of Appeals in Cincinnati.

WILLIAM L. HEIM, Kane, Pennsylvania, was elected a director of the Columbia Carbon Company at the annual meeting on April 3. His father was one of the founders of the company.

GEORGE C. HANTELMAN, instructor, Goodyear Vocational School, spoke on "European Affairs" before the Luncheon Club of the American Legion at Akron on April 4.

BRUCE C. DODD OPENING TECHNICAL LABORATORY

Bruce C. Dodd, who severed his connection as Eastern divisional manager for the Anderson-Prichard Oil Corporation as of March 1, has announced that he is opening a technical research laboratory under the name of Bruce C. Dodd

Bruce C. Dodd

and Company. The new firm will be located in the First Central Trust Building in Akron. Mr. Dodd, himself, is a member of the Petroleum, Rubber and Paint and Varnish divisions of the American Chemical Society.

According to present plans the new research laboratory will serve both the petroleum refiner and the user of these products. It will supply a complete consulting service in a field which, reports Mr. Dodd, to date has been subject to little research activity. Associated with the laboratory will be technical naphtha salesmen who will assist the salesmen of refiners using this service in developing and closing sales. The entire service is planned for the smaller refiner serving a limited area in tank car quantity direct and in less than carload quantity through a local independent jobber.

Naphthas sold to the trade today fall into two general classes, according to Mr. Dodd, high solvent and low solvent strength naphthas. It is the determination of the new research laboratory to enlarge the market for Michigan and Pennsylvania naphthas which normally are considered inferior because of their low solvent strength. It is interesting to note that the telephone number of the new company—Hemlock 3633—spells "dodd" when the number itself is dialed.

Change Restriction Quotas

The International Rubber Restriction Committee reduced the quota for the second quarter of the year from 75 to 70% of allowable production last month and further announced a quota of 65% for the balance of the year. Therefore, rubber shipped to world markets during 1935 will approximate 750,000 tons as compared with world shipments of 1,041,000 tons in 1934, a record high. The Dutch East Indies, however, have decided to maintain the restriction percentage for the second quarter at 25% instead of the ordered 30%, the possible excess production to be made up later in the year when the export percentage will probably be set at 60%, or 5% below the rate set by the Restriction Committee.

NEW ENGLAND NEWS

Revival of the automotive industry, which now appears to be headed toward its best production and sales year since 1929, is strongly reflected in Southern New England rubber manufacturing plants which supply parts, accessories and equipment for automobiles. Many rubber concerns in Connecticut and Massachusetts sell a large portion of their annual output to motor vehicle manufacturers, dealers and users.

Tire and battery manufacturers in the two states are benefiting materially from the spurt in automobile production. Fisk Rubber Corp., Chicopee Falls, Mass., recently revealed that sales for the calendar year 1934 were about a million dollars' higher than 1933, although advances in the cost of labor and materials cut down the net profit.

Norwalk Tire & Rubber Company, Norwalk, Conn., has increased its production of batteries from 1,200 a month to 10,000, according to John W. Whitehead, president. C. C. Ness, of Boston, Mass. for 20 years storage battery engineer for the Presto-Lite Company and the National Carbon Company, and recently vice-president and general factory superintendent of the Perine Battery Company, Boston, is now in charge of the Norwalk battery department. Armstrong Rubber Company, West Haven, Conn., tire manufacturer, is also showing improvement, it is reported. Hartford Battery Sales Corp., Milldale, Conn., is in a position to expand its operations, having obtain an RFC loan of $35,000.

Sponge Rubber Products Co., Derby and Shelton, Conn., is very busy producing rubber items for the automotive industry, President Frederick M. Daley told THE RUBBER AGE. The company's automotive products include molded parts, arm-rests and anti-squeak and anti-rattle items.

Raybestos-Manhattan, Inc., Bridgeport, Conn., manufacturing brakelining and other materials, is operating on a busy schedule and a plant addition is being erected in Bridgeport at a cost of $11,500. Directors recently voted a dividend of 25 cents a share, payable March 15 to stockholders of record February 28. Earned net income in 1934 totalled $750,891.59.

Russell Mfg. Company, Middletown, Conn,. which secures a very large part of its business from the automotive industry, has been operating at an improved level of production for a number of months. The company has made steady progress since reorganization was effected.

Bernard J. Lee, vice-president of Jenkins Bros. Company, Bridgeport, Conn., reports heavy orders for tape used by automobile manufacturers, the volume running into millions of pounds. Production is said to be near capacity on this item and other divisions of the company are stepping up operations.

Duro-Gloss Rubber Company, New Haven, Conn., and a number of other plants manufacturing rubber goods used in the automotive industry are feeling the effects of sharply increased car production.

United States Rubber Products, Inc., and Naugatuck Chemical Company, both of Naugatuck, Conn., and subsidiaries of United States Rubber Company, have been named defendants in two civil actions for damages totalling $250,000 filed in Waterbury Superior Court by the Vanasse Ice & Coal Co., Waterbury. The ice firm charges that smoke, soot and fumes from the rubber regenerating plant operated by the defendants had settled on two Naugatuck ponds owned by the plaintiff, making the ice dirty and unfit for ordinary use. The Vanasse company was forced to spend large sums for salvaging of the ice and to purchase other ice for customers, it claims. The charge is also made that the rubber companies disregarded requests to eliminate the alleged nuisance.

In line with the company's policy of encouraging social activities among its employes 250 employes of footwear divisions of United States Rubber Products, Inc., Naugatuck, Conn., staged a St. Patrick's party March 14 in the game room of Building 47. Speakers included J. D. Wilmot, superintendent of the waterproof mill, and R. J. Ford, Ked mill executive. Factory Manager Walter H. Norton also attended.

United States Rubber Company staged a three-day showing of rubber bathing suits during March at the Hotel Bond, Hartford, Conn. Bathing caps, beach footwear and swim toys were also displayed.

Fisk Rubber Corp. has started the manufacture of rubber heels and garden hose at its Chicopee Falls, Mass., plant, where about 1500 hands are now employed. Daily production of automobile tires was recently reported as 7,600. It is understood that the production of golf balls may be transferred to Chicopee Falls from the New Bedford, Mass., plant.

Two Connecticut rubber companies have received contract awards from the Boston quartermaster depot, U. S. Army, according to announcement by Major George Luberoff, commander. U. S. Rubber Products, Inc., Naugatuck, will furnish 91,500 pairs of rubber gaiters and 3,500 pairs of boots, for a total sum of $409,712.72. Goodyear Rubber Co., Middletown, has an order for rubber footwear of $27,081.47.

Trump Co. Sues Chicagoan

Suit in the amount of $50,000 was filed on March 22 in the Common Pleas Court of Akron by the Trump Products Company, that city, against William L. Cratty, Wrigley Building, Chicago. The suit charges violation of a contract under which the Chicagoan was to take the entire replacement output of rubber auto mats manufactured by Trump Products. It further charges that Mr. Cratty renounced the contract as of February 27, 1935. It is understood that the contract called for the taking of the mat output progressively increasing from 300 to 1,000 mats per day over a five-year period.

Discusses Latex Mixes

The major portion of the March-April issue of *The Vanderbilt News* is devoted to a series of articles on latex mixes including "Non-Thickening Latex Mixes" with butyl zimate and various percentages of sulfur. An interesting article on "Latex Rubber Roadways" by J. D. Hastings of the Rubber Research Institute of Malaya is also part of this issue. Several up-to-date compounding suggestions for the use of Vanderbilt materials in various rubber products are part of the issue as well as a brief article on "Advantages of Reogen in Carbon Black Masterbatches."

Jackson Exhibits Rubber Mats

One of the interesting exhibitions on display at the recent Modernization Show, held during the week of March 25 at the Port Authority Building in New York City, under the auspices of the New York City Better Housing Committee, was that of the O. W. Jackson Company, New York, distributors of rubber mats and stair treads. The floor of the Jackson exhibit was covered with every type of mat or matting sold by the company for both home and commercial use.

LOS ANGELES NEWS

The California Rubber Manufacturers' Association at its regular monthly supper last month, held at the Jonathan Club, re-elected its present set of officers. Charles N. Merralls, president of the Rubbercraft Corporation of California, Ltd., was re-elected president for the fourth consecutive time; Kirk Hill, of the Kirkhill Rubber Company, vice-president; and J. C. Ballagh, of the Patterson-Ballagh Corporation, Ltd., secretary and treasurer. These three officers with two additional directors constitute the board of directors. The two directors, also re-elected, are Walter Smith, E. M. Smith Company, and Douglas Radford, West American Rubber Company.

Later in the month the entire membership of the association was entertained socially at the home of President Merralls in Los Angeles. Representatives of the group at San Francisco also attended this social gathering.

"To date," says Mr. Merralls, "our association has devoted practically all of its energies to building up understanding and friendships among the manufacturers. We feel that such understanding must precede any constructive effort such as suggesting protective legislation or any other such jobs usually coming before an association of this kind. We are not large enough yet and do not have sufficient funds to go ahead as we expect to later. In the meantime if we can build up a spirit of work-together, however long it takes, we feel that we can when the time comes assess the amount of dues necessary to create funds.

"We are not now increasing our membership very greatly as we are not quite sure of the real definition of a rubber manufacturer. There are throughout the city scores of men turning out articles made of rubber, but we do not feel that a man with one press and practically no investment should be classed as a manufacturer, properly speaking.

"We all look for rapid development of the rubber industry from a manufacturing angle in Los Angeles, however, when times again get back to normal. There is a tendency on the part of the men in our association to go in for factory improvements right now and the move is toward expansion instead of toward contraction. In our own factory we are constantly in the process of enlargement and improvement."

Financial News

KELLY-SPRINGFIELD REPORTS LOSS FOR 1934

According to the receivers' report the Kelly-Springfield Tire Company, New York, and subsidiaries, had a net loss of $851,906 for the year ending December 31, 1934, after deducting depreciation, interest, taxes, and other charges. The company reported a loss of $961,998 in the preceding year.

It is pointed out that the loss for the year 1934 as reported does not include any provision for receivership court costs nor accrued interest on the ten-year 6% subordinate notes due April, 1942 since December 18, 1934, the date of the receivership. A provision of $66,-681 was charged against the deficit account for obsolete materials and supplies.

Current assets as of December 31, 1934 were shown at $5,132,762 of which $869,931 was in cash and convertible Government securities. Current liabilities were set at $243,350. In the preceding year the company reported current assets of $6,918,-275 and current liabilities of $696,677. The consolidated balance sheet as of December 31, 1934 shows total assets of $11,717,398, compared with $13,563,497 on December 31, 1933. Inventory at the end of 1934 was shown at $2,595,512 against $2,526,-057 at the end of 1933.

Kelly-Springfield did a gross sale business amounting to $7,350,682 during 1934. Operating cost was shown at $7,675,165. Other income and other charges resulted in the net loss of $851,906 for the year.

Profit for American Wringer

American Wringer Company, Woonsocket, Rhode Island, reports net profit of $64,806.99 for the year of 1934 compared with a profit of $164,608.86 in the preceding year. According to a statement accompanying the financial report, issued as of February 28, 1935, business volume of the company this year is nearly 100% greater than last year but until the "price structure is better adjusted to increased costs" the consideration of current dividends has been deferred until July 1. The statement also points out that the difference in net profits between 1934 and 1933 was due "largely by the additional labor cost and shorter working hours under the NRA."

$110,663 LOSS REPORTED BY INTERCONTINENTAL

Intercontinental Rubber Company, New York, reported operating profit of $102,-660 for the year ending December 31, 1934, which was reduced to a net loss of $110,663 charged to surplus after deducting various charges. The company reported a net loss of $172,453 in the preceding year, although operating profit for the year was reported at $26,514.

The surplus account of Intercontinental shows an increase in the deficit from $220,227 a year ago to $1,793,110 on December 31, 1934. In the balance sheet this amount was debited to the capital stock which, after the charge, totaled $4,166,071 as compared with $6,085,363 last year.

In a letter to stockholders accompanying the report George H. Carnahan, president, makes it clear that the increase in the deficit was due to the provision of the stated value of balances including "patents, trade-names, property, development, advances and deferred charges" amounting to $1,494,-986. In the balance sheet patents, trade-names, etc. previously carried at $128,703 are written down to $1.00.

The statement to stockholders also explained that Intercontinental Rubber was having difficulty with the Government of Mexico over title and control over Cedros Hacienda, now in litigation, where the company cultivates the guayule plant.

Less Profit for O'Sullivan

O'Sullivan Rubber Company, Inc., Winchester, West Virginia, reports net profit of $26,877 for the year 1934 after deducting Federal taxes and other charges. This compares with $96,997 profit in the previous fiscal year ended September 30, 1933. Net sales from 1934 were reported at $1,313,120 as compared with $1,156,634 shown in the previous statement.

Machinery Company Has Loss

National Rubber Machinery Company, Akron, Ohio, reports a net loss of $123,-038 for the year 1934 after taxes, depreciation, interest and other deductions. The company reported a net loss of $57,-763 in the preceding fiscal year.

Profit for Pittsburgh Plate

Pittsburgh Plate Glass Company, Pittsburgh, Penna., and subsidiaries, including the Columbia Alkali Corporation, reports net profit of $5,763,683 for the year ending December 31, 1934. In the previous year the company had a net income of $3,993,934. A total of $3,104,-614 in dividends was declared during 1934.

Dominion Rubber Has Profit

Dominion Rubber Company, Ltd., Montreal, Canada, has reported a net profit of $306,778 for the year 1934 contrasted with a loss of $17,090 in the preceding year. After allowing for dividends to minority shareholders of a subsidiary company, 1934 profits amounted to $10.00 per share on the 30,000 shares of 7% preferred stock outstanding.

Central Reclaim Reopens

Central Rubber Corporation, rubber reclaimer of Findlay, Ohio, is now operating on a full-time basis, 24-hours per day on a six day week, after a shut-down of several years. The plant was reopened recently after the machinery and equipment was overhauled and repaired. Before operations were resumed the greater part of the outstanding stock was purchased by Findlay business men. No stock has been offered to the public. S. W. Weiger is president and treasurer of the company while W. B. Brewer is vice-president and secretary.

MONSANTO CHEMICAL TO ABSORB THE SWANN CORP.

Stockholders of both the Monsanto Chemical Company, St. Louis, and the Swann Corporation, Birmingham, Alabama, will be asked on April 27 to approve the merging of the Swann company into Monsanto Chemical. The boards of directors of both companies have already approved the amalgamation. If ratified Swann stockholders will receive one share of Monsanto common stock for each 4½ shares of Swann common stock. The Monsanto Chemical Company acquired a controlling interest in the Swann concern in 1933.

The Swann Corporation has a factory at Anniston, Alabama, and controls two subsidiary companies, the Provident Chemical Company and the Wilckes, Martin, Wilckes Company, operating plants at St. Louis, Mo., and Camden, N. J., respectively. Operations at the Anniston plant are electrochemical and produce phosphoric acid and its derivatives.

Edgar M. Queeny, president of Monsanto, stated that as the operations of the Swann Corporation are non-competitive with Monsanto the acquisition increases the diversity of Monsanto's income and provides new avenues for development in the electrochemical field.

The Swann Corporation has gross assets of about $5,500,000 and a capitalization of 508,000 shares of no par common stock, and $704,000 of subsidiary 6% preferred stock. Net earnings for 1934 were approximately $396,000. The absorption will give Monsanto gross assets in excess of $32,000,000 and after the consummation of the transaction, Monsanto will have approximately 965,000 shares outstanding.

Announcement was also made last month that the Monsanto Chemical Company had acquired the Atlantic Chemical Company, Billerica, Mass., manufacturers of heavy chemicals. The new acquisition is being consolidated with the Merrimac division of Monsanto.

Expect Import Action Soon

As a result of the campaign being waged by manufacturers of rubber toys and novelties in and around Akron, which included the presentation of specific charges before the Tariff Commission by Representative Dow Harter of Ohio, Congress is expected to begin work shortly on a new tariff section of the Recovery Act which will raise a wall against Japanese imports. Charges laid before the Commission accused Japanese manufacturers of imitating rubber products created by American rubber manufacturers, importing them into this country, and selling them at prices below those set by the originators.

Rubber Library Committee

A Committee on Rubber has been organized by the Science-Technology Group of the Special Libraries Association with Miss Edith L. Shearer, consulting librarian of the Western Union, New York, as chairman. Librarians of U. S. Rubber, Firestone, Goodrich and Goodyear are among the members of the newly created committee. The Special Libraries Association will hold its 27th annual convention in Boston at the Hotel Statler on June 11 to 14, inclusive. W. N. Seaver, librarian, Massachusetts Institute of Technology, Cambridge, Mass., is correspondent for the Science-Technology Group of the Association.

FORM FIRESTONE MILLS WITH $2,000,000 STOCK

Firestone Cotton Mills, Inc., with an authorized capital stock of $2,000,000 was incorporated at Raleigh, N. C., on April 2. Emery B. Denny, F. A. Whitesides and W. F. Allen, all of Gastonia, N. C., were the incorporators. The paid-in stock was listed as ten shares valued at $1,000 of which Mr. Denny holds four and the two other incorporators hold three shares each. The charter granted the newly-organized company calls for the "manufacturing, buying and selling of cotton fabrics, cloth and textile fabrics of every kind and character."

Although no official word has been issued by Firestone relative to the incorporating of the new company the filing of papers is believed to be a definite indication that Firestone has acquired the Loray unit of the Manville-Jenckes Corporation, of Providence, Rhode Island. It has been common knowledge for some time, as reported in our previous issue, that Firestone was dickering with Manville-Jenckes' executives for the purchase of the Gastonia plant. Firestone engineers and accountants spent several weeks at the factory making special inspections and Harvey Firestone, Sr., visited the plant late in February.

The City of New Bedford, Mass., recently attempted to negotiate the sale of the Whitman Mill property in that city with Firestone interests, which property it owns by virtue of a tax judgment. The property, however, was stripped of its machinery before acquisition by the city, and it is understood that Firestone preferred a completely equipped factory for its purpose.

Goodrich Plans Vacations

The B. F. Goodrich Company, Akron, will expend $304,325 on its 1935 vacation program for factory employees, said to be 51% more than spent in 1934. A total of 7,265 factory employees will be given vacations, of which 3,537 are eligible for one-week vacations, having been with Goodrich for from five to ten years, the remainder receiving two-week vacations, having served the company for more than ten years.

Suggests Dropping Codes

Donald R. Richberg, executive director of the National Emergency Council, submitted a list of 286 industrial codes to the Senate Finance Committee on March 13 with the recommendation that they be officially dropped. Among the codes submitted were those covering the reclaimed rubber, carbon black and used machinery and equipment industries. The submitted list included all codes for industries employing fewer than 10,000 persons. No mention was made of the rubber manufacturing code.

Forming Rubber Buying Group

A buying group for the express purpose of obtaining more favorable prices on rubber footwear is being formed by Otto H. Schuler, 1005 West Broadway, Minneapolis, chairman of the Rubber Footwear Investigating Committee of the Northwestern Shoe Retailers Regional Association. According to Mr. Schuler an investigation revealed that mail order and chain stores are selling many types of rubber footwear for as little, or less, than the independent retailer can buy them.

Obituaries

Thomas J. Wall

Thomas J. Wall, a foreman for the past 19 years in the employ of the Acme Rubber Manufacturing Company, Trenton, N. J., died on March 23 while riding in an automobile. Death was attributed to a heart attack. He was a member of the Moose fraternity and was sixty-five years old. He is survived by his widow and a son. Interment was made at Lambertville, N. J.

James Henry Learned

James Henry Learned, who was associated with the U. S. Rubber Company for many years after that company absorbed the Revere Rubber Company which he joined in 1889, died on March 7. He was born in Chelsea, Mass., in 1868 and had been a member of the Art, Boston City, Algonquin, Country and University Clubs. He was also a member of the Rubber Association of America at one time. Funeral services were held at his home in Brookline, Mass., on March 9. He leaves a widow, a daughter, a sister and two brothers.

William P. Earle

William P. Earle, one of the organizers of the firm of Earle Brothers, crude rubber brokers, in 1877 from which he retired in 1920, died on March 15 at his home in Brooklyn, N. Y., of pneumonia. He was born in Providence, R. I., and came to New York in 1877, organizing the crude rubber brokerage firm shortly thereafter. Funeral services were held in Brooklyn on March 17. Interment took place at Swan Point, Providence, Rhode Island. He leaves a son, Wm. P. Earle, Jr., who still carries on the business at 66 Broad Street, New York, and a daughter.

James F. Leahy

James F. Leahy, general superintendent of the Buffalo, N. Y., plant of the Farrel-Birmingham Company, Inc., died at his home in Kenmore, N. Y., on Wednesday, March 6, 1935, after a month's illness. Mr. Leahy was born in Torrington, Conn., October 23, 1870, and resided in Ansonia for 22 years, where he had been in the employ of the Farrel company since December 2, 1901. He had served as machine shop foreman at the Ansonia plant before being transferred to the superintendency at Buffalo 12 years ago. He was a skilled mechanic and an expert in gear cutting. In 1922 he and the late David R. Bowen accompanied Franklin Farrel, Jr., to England to investigate the gear cutting process invented by W. E. Sykes. Upon their recommendations the Farrel company purchased the American rights to the patent and acquired the plant at Buffalo where the Sykes gear machines, gears and related products are manufactured. Mr. Leahy is survived by his wife. Funeral services were held from his late residence and from St. John the Baptist R. C. church in Tonawanda, N. Y., on Saturday, March 9th.

LOOKING FOR A JOB?
See Classified Ads—Page 55

SCRAP RUBBER INSTITUTE HOLDS ANNUAL MEETING

The Scrap Rubber Institute held its annual meeting on March 20 at the Hotel Sherman, Chicago, in connection with the Twenty-Second Annual Convention of the National Association of Waste Material Dealers. Through the unanimous vote of the Nominating Committee Nat E. Berzen was elected president; Julius Muehlstein, of H. Muehlstein & Company, New York, was elected vice-president; and Charles M. Haskins, secretary-treasurer.

The following representatives were unanimously elected to serve on the Code Authority for the Scrap Rubber Trade: E. B. Friedlander, Julius Muehlstein, A. Schulman and Samuel Greenfield.

Master Holds Sales Meeting

Salesmen representing the Falls, Cooper and Giant divisions, met last month in the offices of the Master Tire & Rubber Corporation, Akron, Ohio, for a combination sales meeting. A sales and credit policies forum was held during the sessions and addresses were made by President R. P. Bremer, Vice-President F. C. Millhoff, and other company executives. One of the principal topics of discussion during the meeting was on the "budget plan" of selling developed by Master which was explained by C. R. Wetzel assistant-treasurer in charge of credits. A good tire year in 1935 was predicted by company officials.

Chrysler Using Lifeguard Tube

The recently-developed and demonstrated Lifeguard tube, more popularly known as the "double tube" is now available in all Chrysler, DeSoto, Dodge and Plymouth cars, products of the Chrysler Corporation, Detroit, Mich. The tube was developed by Goodyear and consists of a heavy tube with a second tube built inside, both being inflated by the same valve.

MEMA Issues New Roster

The Motor & Equipment Manufacturers Association has issued a new membership roster as of February 1, 1935. Names and addresses of all members, together with the name of the representative member from each company, and the principal products each member manufactures, is contained in the new roster. Copies may be obtained from the Association at 250 West 57th Street, New York.

American Wringer Names Doane

Doane & Company, of New York City, has been named exclusive sales agent in New York, New Jersey and Pennsylvania, exclusive of Philadelphia, for the line of Tensilastic rubber printing plates and rubber rollers for engraving, manufactured by the American Wringer Company, Woonsocket, R. I. An advertising campaign is planned by the Doane concern on the Tensilastic products.

Kelly-Springfield Moves

The Kelly-Springfield Tire Company has moved its executive offices, including all departments with the exception of the Export Division, to its factory at Cumberland, Maryland. The export department remains in New York City at new quarters soon to be announced.

New Rubber Goods

Vogue Miracle Tread Tire

Featuring the "miracle tread" a new tire has been introduced by the Vogue Rubber Company, 2359 Indiana Avenue, Chicago. The deep channels of the tread provide a

constant "edge" grip on the road surface due to never closing completely, thus preventing slipping in any one direction. It is further explained that these open channels provide a continuous air cushion eliminating suction noises, humming or swishing. Introducing of the "Miracle Tread" model completes the Vogue line now available for all makes of modern cars.

Popeye Inflated Rubber Ball

Supplementing its recently-introduced line of Popeye the Sailor rubber novelties the Miller Rubber Company, Inc., Akron,

has introduced a line of inflated rubber balls featuring the Popeye character, under exclusive license from King Features Syndicate. Nine different size balls are included in the line, ranging from 2½ to 8 inches. The three smaller sizes are manufactured from Salmon Red stock with the sailor character imprinted on one side in black ink. The next three sizes have the character inlaid on one side, the inlay being printed with blue ink on white stock and cured into the ball itself. There are two inlays, one on each side, on the 7- and 8-inch balls, with red and blue printing on white stock.

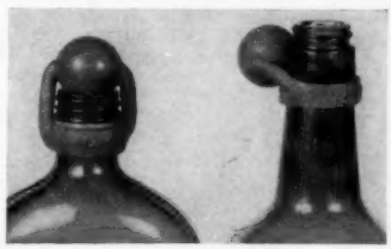
Rubber on Dayton Racquets

Dayton Racquet Company, Inc., Arcanum, Ohio, in its new line of tennis, badminton and squash racquets, has adopted as standard equipment butt pieces of molded one-piece rubber, effectively preventing curling

or deterioration. One of the new models, termed The Eagle, is elaborately trimmed, streamlined, and is available in standard sizes and weights. It has an inlaid handle, and is equipped with the rubber heel plate described above.

Tos-Top Rubber Stopper

An interesting rubber item featured by the Tos-Top Sales Company, 448 Lexington Avenue, New York City, is the Tos-Top stopper, or bottle "cork." This rubber gadget has a ring which slips around and over the neck of a bottle, and a solid



sphere which serves as a cork or stopper. When the liquid in the bottle is desired a flick of the thumb slides the stopper off the top. It is replaced by merely pushing it back to its original position. According to its sales agents the Tos-Top stopper is proof against alcohol and imparts no taste to bottle contents.

G-E All-Rubber Plug

A new all-rubber plug, styled in a modernistic manner to harmonize with modern appliances and interior decorations, has been announced as a new product of the General Electric Company's Merchandise Department, Bridgeport, Conn. Designed to be molded directly onto No. 18 rubber cord, it is said to be safe and reliable, and

bears the Underwriters' Laboratories seal of approval. It is designated as the Moderne No. 30.

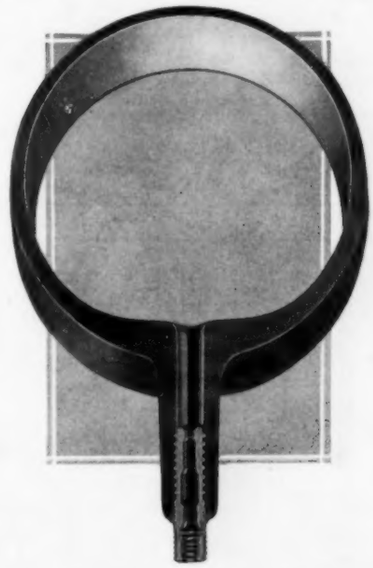
Mickey Mouse Water Bottle

Seiberling Latex Products Company, Barberton, Ohio, is featuring Mickey Mouse in a new guise, in the form of the Infant Mickey Mouse Hot Water Bottle.

This junior size bottle, made of regular heavy weight rubber, is molded in the shape of a nightgown-clad Baby Mickey. Three colors are used on the novelty, blue, pink and white. The flopping ears of the character made famous by Walt Disney almost conceal the stopper which indicates the usefulness of the new item as a real, usable hot water bottle. The latest Seiberling novelty is packed in an attractive blue box and is held in place by a button arrangement. It is being manufactured under license of Kay Kamen, Inc., representing Walt Disney Enterprises.

New Firestone Sealtyte Tube

Claimed to be pinch-proof and leak-proof, thus increasing tire life 25%, Firestone Tire & Rubber Company, Akron, Ohio, has developed a new black tube known as the Firestone Sealtyte Tube. It is said to be pinch-proof because it is made of a tough black rubber compound similar to tire tread stock, and because it is formed with an extra thick base. The tough stock and thick base not only prevent pinching, say Firestone engineers, but resist cutting and wear giving the tire longer life. Two features are stated to make this tube leak-proof, one being its specially compounded silver lining which seals the rubber against air loss, the second being an all-rubber valve stem vulcanized into the tube



as an inseparable unit. Because of these various features the Sealtyte Tube is claimed to give an average of 25% longer tire mileage by eliminating under-inflation.

MARKETS

RUBBER—COTTON AND FABRICS—CHEMICALS

NEW YORK, APRIL 8, 1935

Crude Rubber

PRICES were particularly erratic last month due to a series of favorable and unfavorable events crowding one another in rapid succession. Swinging in a range of 140 points since our previous report the price of spot rubber on the Exchange touched a new low of 10.38 on March 25. On the following day a quotation of 11.69 was reached, close to the 11.78 high for the month reached on March 13, this surprising jump of 131 points being due to the unexpected announcement of the Restriction Committee in lowering export quotas to 70% after previously having announced a 75% reduction. The price was kept low early in March due to the demoralizing break in cotton prices. Several factors, including factory curtailments, intensive selling from speculative quarters, and news of the impending Akron strike, all served to bring prices on the Exchange for spot rubber steadily downward in the last two weeks, reaching 10.92 on April 8. Quotations in the outside market, Exchange, London and Singapore, follow:

As of April 8

Plantations—

Ribbed Smoked Sheets—			
Spot	—	@	.10⅛
May-June	—	@	.11⅛
July-Sept.	—	@	.11⅛
First Latex, crepe spot	—	@	.11⅞
Amber Crepe, No. 2	—	@	.10⅞
Amber Crepe, No. 3	—	@	.09⅞
Amber Crepe, No. 4	—	@	.09⅛
Brown Crepe, clean thin	—	@	.10⅞
Brown Crepe, rolled	—	@	.09⅛

Latex—

Liquid Latex, per gal.	.48	@	.49

Paras—

Up-River, fine	—	@	.09½
Acre Bolivian, fine	—	@	.09¾

Balata—

Block, Ciudad	—	@	.33

LONDON MARKET

Standard Smoked Sheets—Buyers—April 8			
April	—	@	5 5/16d
July-Sept.	—	@	5 9/16d

SINGAPORE MARKET

Standard Smoked Sheets—Sellers—April 8			
April	—	@	5 7/16d
July-Sept.	—	@	5 9/16d

Cotton

Increasing uneasiness regarding Government plans for 1935 relative to the cotton market, principally the persistent report that there would be no loans on the 1935 crop, plus disclosure of the extent to which world consumption of American cotton was decreasing, resulted in a scattered wave of domestic and foreign selling on March 11 which brought the price of cotton down from 12.30 on the previous trading day to 11.30, with a decline of more than $9.00 per bale in futures. After a short recovery the continued mystery relative to Government action resulted in another drastic price break on March 18 reaching a low for the month of 10.65. Official announcement, late in March, that the Government would extend the 12c loans beyond the maturity date of July 31 was responsible for a somewhat steadier price early in April, around 11.30, although the situation has not improved sufficiently to bring back confidence in the market. Purchasers are awaiting further clarification of the Government's program. Quotations for middling uplands on the N. Y. Cotton Exchange follows:

	Mar. 9	April 8		
	Close	High	Low	Close
April	....	11.05	11.05	11.05
May	12.12	11.09	10.95	11.09
July	12.18	11.16	11.01	11.15

Scrap Rubber

The situation in scrap is quiet at this time being influenced largely by the low prices of crude and the Akron strike situation. Prices are somewhat lower than in our last report and it is reported that very little stocks are available at present low levels. Quotations, in the East, follow:

(Prices to Consumers)

Auto tire peelings	ton 17.00	@	19.00
Mixed auto	ton 7.50	@	8.50
Clean solid truck tires	ton 34.00	@	36.00
Boot and shoes	ton 19.50	@	21.00
Arctics, untrimmed	ton 15.50	@	17.00
Inner tubes, No. 1	lb. .06¾	@	.07
Inner tubes, No. 2	lb. .03⅛	@	.03¼
Inner tubes, Red	lb. .02⅜	@	.02½

Reclaimed Rubber

Reclaimers report conditions fairly satisfactory with only a slight let-up from the levels of a few weeks ago. Shipments have fallen off slightly and production has held up rather well. Concern is felt over the Akron strike situation and the possibilities of spreading to other rubber centers with the result that uneasiness is felt in some quarters. Quotations remain unchanged since our last report as follows:

High Tensile

Super-reclaim, black	lb. .08¾	@	.09
High Tensile Red	lb. .07	@	.07¼

Shoe

Unwashed	lb. .06½	@	.06¾
Washed	lb. .08	@	.09

Tube

No. 1 (Floating)	lb. .13	@	—
No. 2 (Compounded)	lb. .07½	@	.07¾

Tires

Black	lb. .05	@	.05¼
Black, selected tires	lb. .05¼	@	.05½
Dark Gray	lb. .06¼	@	.06½
White	lb. .09¼	@	.09½
Truck, Heavy Gravity	lb. .05½	@	.06
Truck, Light Gravity	lb. .06	@	.06¼

Miscellaneous

Mechanical blends	lb. .04¼	@	.04⅜

Tire Fabrics

(Prices Net at the Mill—Process Tax Included)			
Peeler, carded, 23/5/3	lb. .34¼	@	.34¾
Peeler, carded, 23/4/3	lb. .35¼	@	.35¾
Peeler, carded, 15/3/3	lb. .32¼	@	.32¾
Peeler, carded, 13/3/3	lb. .31¼	@	.31¾
Egyptian, carded, 23/5/3	lb. .47	@	.47½
Egyptian, combed, 23/5/3	lb. .51	@	.51½
CHAFERS			
Carded, American, 1 1/16"	lb. .34	@	.34½
Carded, American, 1"	lb. .30	@	.32
LENO BREAKER			
Carded, American, 1 1/16"	lb. .34½	@	.35
Carded, American, 1"	lb. .30½	@	.31½

Sheetings

Count	Width	Weight			
48x40	36 in.	5.50	lb.	— @	.05⅛
40x40	36 in.	6.15	lb.	— @	.04¾
40x36	36 in.	6.50	lb.	— @	.04½
48x48	40 in.	2.50	lb.	— @	.10½
48x48	40 in.	2.85	lb.	— @	.09⅛
56x60	40 in.	3.60	lb.	— @	.08⅛
48x44	40 in.	3.75	lb.	— @	.07½
44x40	40 in.	4.25	lb.	— @	.06⅝

Ducks

Enameling	lb. .32	@	.37½
Belting and Hose	lb. .34	@	—
Single filling, A grade	lb. .16¾	@	.17¼
Double filling	lb. .17¾	@	.18¼

Closing Rubber Prices on New York Commodity Exchange, Inc.

No. 1 Standard Contract of 10 tons

FROM MARCH 11 TO APRIL 8

Date	Spot	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Sales
Mar. 11	11.62	11.65	11.68	11.72	11.78	11.85	11.92	12.00	12.08	12.16	12.25	12.32	12.40	——	591
12	11.50	11.53	11.55	11.57	11.64	11.71	11.79	11.87	11.94	12.01	12.08	12.15	12.23	——	698
13	11.78	11.78	11.82	11.87	11.92	11.98	12.05	12.13	12.20	12.30	12.40	12.42	12.50	——	660
14	11.38	11.40	11.44	11.48	11.54	11.61	11.67	11.74	11.81	11.90	12.00	12.01	12.10	——	469
15	10.95	10.98	11.01	11.01	11.07	11.14	11.20	11.26	11.34	11.42	11.50	11.56	11.64	——	755
16	11.06	11.08	11.09	11.10	11.17	11.24	11.31	11.38	11.46	11.55	11.64	11.73	11.82	——	179
17															
18	10.55	10.62	10.63	10.65	10.71	10.77	10.85	10.94	11.02	11.10	11.18	11.25	11.33	——	657
19	10.87	10.89	10.91	10.93	10.98	11.03	11.11	11.19	11.25	11.32	11.39	11.48	11.56	——	537
20	11.06	11.08	11.09	11.11	11.17	11.24	11.30	11.37	11.43	11.52	11.62	11.64	11.72	——	378
21	10.58	10.62	10.63	10.65	10.70	10.75	10.83	10.92	11.00	11.08	11.17	11.30	11.38	——	585
22	10.60	10.66	10.71	10.76	10.81	10.86	10.93	11.01	11.09	11.18	11.27	11.33	11.42	——	334
23	10.50	10.52	10.57	10.62	10.68	10.74	10.81	10.88	10.96	11.05	11.14	11.21	11.32	——	62
24															
25	10.38	10.43	10.48	10.53	10.59	10.65	10.73	10.81	10.85	10.93	11.02	11.06	11.15	——	126
26	11.69	11.75	11.78	11.82	11.87	11.92	11.99	12.06	12.13	12.21	12.29	12.33	12.41	——	1175
27	11.62	11.65	11.62	11.72	11.78	11.84	11.91	11.98	12.05	12.12	12.20	12.28	12.36	——	363
28	11.44	11.48	11.45	11.55	11.61	11.67	11.75	11.83	11.90	11.98	12.06	12.14	12.22	——	324
29	11.06	——	11.05	11.14	11.22	11.30	11.36	11.43	11.50	11.58	11.66	11.74	11.82	——	573
30	11.12	——	11.09	11.19	11.26	11.34	11.42	11.50	11.57	11.64	11.72	11.80	11.88	——	103
31															
Apr. 1	11.31	——	11.31	11.40	11.45	11.51	11.58	11.65	11.73	11.82	11.91	12.00	12.09	12.18	151
2	11.20	——	11.25	11.34	11.40	11.46	11.53	11.60	11.67	11.74	11.85	11.95	12.04	12.13	224
3	11.20	——	11.21	11.30	11.36	11.42	11.48	11.55	11.63	11.71	11.80	11.90	12.00	12.10	200
4	11.30	——	11.29	11.38	11.43	11.48	11.55	11.62	11.70	11.78	11.86	12.00	12.10	12.20	197
5	11.00	——	10.99	11.07	11.13	11.19	11.25	11.32	11.39	11.47	11.55	11.63	11.71	11.79	371
6	11.00	——	10.99	11.07	11.13	11.20	11.27	11.34	11.43	11.51	11.60	11.68	11.75	11.82	41
7															
8	10.92	——	10.94	11.02	11.08	11.15	11.23	11.31	11.38	11.45	11.52	11.58	11.65	11.73	200

Rubber CHEMICAL Markets

NEW YORK, APRIL 10, 1935

[All Quotations F.O.B. Works Unless Otherwise Noted]

ACCELERATORS

Organic			
A-1 (Thiocarbanilid)	lb.	.21 @	.25
A-5-10	lb.	.33 @	.36
A-7	lb.	.53 @	.65
A-11	lb.	.60 @	.75
A-16	lb.	.55 @	.65
A-19	lb.	.56 @	.75
A-32	lb.	.70 @	.80
A-17	lb.	— @	—
Aldehyde ammonia, crystals	lb.	.65 @	.67
Altax	lb.	— @	—
Captax	lb.	.55 @	.65
Crylene paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.44 @	.47
Diphenylguanidine	lb.	.35 @	.37
Ethylidene aniline	lb.	.45 @	.47½
Formaldenyde aniline	lb.	.37½ @	.42
Guantal	lb.	.42 @	.51
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.37 @	—
Lead Oleate, No. 999	lb.	.11 @	—
Witco	lb.	.11 @	—
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.36 @	.37
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.80
Phenex	lb.	.50 @	.55
Pipsolene	lb.	3.55 @	4.00
R & H 40	lb.	.40 @	.41
R & H 50	lb.	.40 @	.41
R-2	lb.	1.55 @	1.90
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Thiocarbanilid, drums	lb.	.21 @	.25
Trimene base	lb.	.75 @	—
Triphenylguanidine	lb.	1.20 @	—
Tuads	lb.	.58 @	.60
Ureka	lb.		
Ureka B	lb.	.62 @	1.00
Ureka C	lb.	— @	—
Vulcanex	lb.	.58 @	.69
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.		
Zimate	lb.	.48 @	.60
Inorganic			
Litharge, domestic	lb.	.06½ @	—
Magnesia, calcined, heavy	ton	60.00 @	65.00

COLORS

Blacks (See Compounding Materials)

Blues

Prussian	lb.	.36 @	.38
Ultramarine	lb.	.10 @	.12

Browns

Sienna, Italian	lb.	.06 @	'13
Umber, Turkey	lb	.04 @	.04½

Greens

Chrome, light	lb.	.20 @	.30
medium	lb.	.21 @	.31
Chromium Oxide, bbl.	lb.	.22 @	.23
Guignet's Green	lb.	.70 @	—

Reds

Antimony crimson, 15/7	lb.	.46 @	—
sulfur, free	lb.	.48 @	.60
Indian English	lb.	.09 @	.10
Domestic (Maroon)	lb.	.11 @	—
Red oxide, pure	lb.	.10 @	.12
Rub-Er-Red, f.o.b. Easton	lb.	.09¼ @	—

Whites

Cryptone CB, No. 21	lb.	.06 @	.06¼
Cryptone, No. 19	lb.	.06 @	.06¼
Lithopone			
Albalith, black label—11	lb.	.04½ @	.04¾
Azolith	lb.	.04½ @	.04¾
Rayox	lb.		
Titanium oxide	lb.	.17 @	.19
Titanox B	lb.	.06 @	.06½
Titanox C	lb.	.06 @	.06½
XX—20 Zinc Sulphide, bbls.	lb.	.10½ @	.10¾
XX—86 Zinc Sulphide, bbls.	lb.	.10½ @	.10¾

Zinc Oxide—American Process

American Azo:			
ZZZ (lead free)	lb.	.05¾ @	.06
ZZ (leaded)	lb.	.05½ @	.05¾
Horsehead Lead Free Brand:			
Special—3	lb.	.05¾ @	.06
XX Red—4	lb.	.05¾ @	.06
XX Red—72	lb.	.05¾ @	.06
XX Red—78	lb.	.05¾ @	.06
XX Red—103	lb.	.05¾ @	.06
U. S. P.—X, bbls.	lb.	.05¾ @	.06
Kadox, black label—15	lb.	.12½ @	.12¾
Blue label—16	lb.	.09¾ @	.09¾
Red label—17	lb.	.08¾ @	.08¾
St. Joe, black label	lb.	.07 @	.07¼
green label	lb.	.05¾ @	.06
red label	lb.	.05¾ @	.06
	lb.	.05¾ @	.06

Zinc Oxide—French Process

Anaconda, lead free	lb.	.05¾ @	.06
Anaconda, selected lead free	lb.	.06 @	.06¾
Florence White seal—7 bbls.	lb.	— @	.10¾
Green seal—8	lb.	.09¾ @	.09¾
Red seal—9	lb.	.08¾ @	.08¾
Yellows			
Chrome	lb.	.15 @	.16
Ocher, dom. med.	lb.	.01½ @	.02

BLACKS

Arrow "Aerfloted" Specification	lb.	.0535 @	.0825
Bone, powdered	lb.	.05½ @	.12½
Carbon, compressed	lb.	.0535 @	.0825
uncompressed	lb.	.0535 @	.0825
"Certified," Cabot	lb.	.0535 @	.0825
Spherons	lb.	.0535 @	.0825
"Disperso"	lb.	.0535 @	.0825
Drop, bbls.	lb.	.05½ @	.14
"Excello," compressed	lb.	.0535 @	.0825
"Fumonex"	lb.	.03 @	.07
"Gastex"	lb.	.03 @	.07
Lampblack	lb.	.07 @	.12
"Micronex"	lb.	.0535 @	.0825
"Supreme"	lb.	.0535 @	.0825
Thermatomic—"P 33"	lb.	— @	—
"Thermax"	lb.	— @	—
United "Dixie" & "Kosmos"	lb.	.0535 @	.0825

COMPOUNDING MATERIALS

Aluminum Flake	ton.	21.85 @	24.50
Ammonia carbonate, lump	lb.	.10½ @	.12
Asbestine	ton	14.00 @	15.00
Barium carbonate (98-100%)	ton	56.50 @	61.50
Barium Dust	lb.	.05 @	.06
Barytes	ton	22.00 @	24.00
Basofor	lb.	.04½ @	—
Bentonite	lb.	.02 @	.03
Blanc fixe dry f.o.b. works	ton	70.00 @	75.00
Calcene	ton	35.00 @	43.00
Catalpo (fact.)	lb.	.02 @	—
Chalk, precipitated			
Suprex white, extra lt.	ton	60.00 @	75.00
heavy	ton	45.00 @	55.00
Clay, Kaolin, domestic	ton	7.50 @	15.00
Aerfloted, Suprex	ton	8.50 @	10.00
Congaree	ton	9.00 @	—
Dark Blue Ridge	ton		
Dixie	ton		
Dixie, Jr.	ton		
Lexington	ton	10.00 @	22.00
McNamee	ton		
Par	ton		
Tensulite	ton		
Witco		15.00 @	—
Cotton Flock	ton	8.50 @	9.00
Glues, extra white	lb.	.10½ @	.18
medium white	lb.	.28 @	.30
Kalite No. 1	ton	30.00 @	55.00
Kalite No. 3	ton	40.00 @	65.00
Magnesium carbonate	lb.	.08 @	—
Mica	ton	65.00 @	80.00
Rottenstone (powdered)	lb.	.02½ @	.05
Soapstone, powdered	ton	16.00 @	22.00
Starch, powdered	cwt.	3.56 @	3.76
Talc, domestic	ton	12.00 @	15.00
Pyrax A	ton		
Whiting, commercial	ton	17.00 @	18.00
English Cliffstone	ton	33.00 @	43.00
Sussex	ton		
Witco	ton	15.00 @	—
Wood Flour	ton	18.00 @	30.00
Zinc Carbonate	lb.	.10½ @	.11
Zinc Stearate	lb.	.19 @	.21

MINERAL RUBBER

Black Diamond	ton	27.00 @	—
Genasco, solid (factory)	ton	25.00 @	27.00
Hard Hydrocarbon	ton		
Parmr, solid	ton		
Pioneer, MR, solid	ton	21.00 @	26.00
Pioneer-granulated	ton		

SPECIALTIES

Aromatics—Rodo	lb.		
Para-Dors No. 5145	lb.	2.00 @	—
Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.80
Tonox	lb.	.56 @	.60

SOFTENERS

Acids			
Acetic, 28%, bbls.	100 lb.	2.40 @	—
glacial, USP, bbls.	100 lb.	12.25 @	—
Nitric, 36 degrees	cwt.	5.00 @	6.00
Sulfuric, 66 degrees	ton	15.50 @	16.50
Acids, Fatty			
Laurex	lb.	.15 @	.16
Stearex	lb.	.08½ @	.13
Stearic, double pressed	lb.	.09 @	.14
Alkalies			
Caustic Soda, 76%	cwt.	3.60 @	3.75
Soda Ash, 58% C.L.	cwt.	2.52 @	—

Oils

Corn, refined, bbls.	lb.	.12½ @	—
Cottonseed, crude	gal.	.093 @	.10
Cycline Oil	gal.	.15 @	.28
Degras (c.l. 100 bbls.)	lb.	.02¾ @	—
Less c.l. (10-25 bbls.)	lb.	.03 @	—
Lots less than 10 bbls.	lb.	.03¾ @	—
Fluxrite	lb.	.05½ @	.06½
Palm Lagos	lb.	.05 @	—
Niger	lb.	.04¾ @	—
Para-Flux	gal.	.17 @	—
Petrolatum, light	lb.	.02 @	.02½
Pigmentaroil, tank cars	gal.	.16 @	—
in drums	gal.	.22 @	.23½
Pine, steam distilled	gal.	.64 @	.65
dest. dist., drums	gal.	.40 @	.45
Rosin Oil, cmpd.	gal.	.40 @	—
Rubtack	lb.	.40 @	—
Seedine, c.l.	lb.	.07¼ @	—
Tackol	lb.	.08½ @	.18
Witco Palm Oil	lb.	.05 @	—
Witco Softener (f.o.b. wks.)	gal.	.15 @	—
Woburn No. 8, c.l.	lb.	.06 @	—
Wobonite, c.l.	lb.	.05 @	—

Resins and Pitches

Pitch, Burgundy	lb.	.05 @	.06
coal tar	gal.	.05½ @	.06
hardwood	ton	20.00 @	25.00
pine, 200 lb. gr. wt	bbl.	6.00 @	—
Rosin, grade K, 280 lb.	bbl.	6.00 @	—
Pigmentar, tank cars	gal.	.16 @	—
in drums	gal.	.22 @	.23½
R. S. L. Resin	lb.	— @	—
Retort Pine Tar, drums	bbl.	12.00 @	13.00

Solvents

Acetone, pure	lb.	.11 @	.12
Alcohol, denatured, methanol, No. 1 bbls.	gal.	.29½ @	—
Benzene, 90%	gal.	.15 @	.24
Beta-Trichlorethane	gal.	— @	—
Bondogen	lb.	— @	—
Carbon, bisulfide	lb.	.05½ @	.06
Carbon, tetrachloride	lb.	.05 @	.05¾
Dichlorethylene	lb.	.29 @	—
Dipentene, cml., drums	gal.	.40 @	.41
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Ethylene dichloride	lb.	.05½ @	.06½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.26 @	.31
Plastogen	lb.		
Reogen	lb.		
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Trichlorethylene	lb.	— @	.09½
Turpentine, spirits	gal.	.54 @	—
dest. dist., drums	gal.	.45 @	—

Waxes

Beeswax, white	lb.	.34 @	.37
Carnauba, yellow	lb.	.34 @	.36
Ceresin, white, dom.	lb.	.08 @	.11
Montan, crude	lb.	.10 @	.11
Ozokerite, black	lb.	.24 @	.25
green	lb.	.24 @	.30
Paraffin (c.l.—f.o.b. N. Y.)	lb.	.26 @	—
Yellow crude scale	lb.	.03¼ @	—
White crude scale 124/126	lb.	.03¼ @	—
Refined, 125/127	lb.	.04¼ @	—

ANTI-OXIDANTS

AgeRite, Gel	lb.		
HP	lb.		
Powder	lb.		
Resin	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Flectol-H	lb.	— @	—
Flectol White	lb.	— @	—
Flectol B	lb.	— @	—
Neozone	lb.		
Oxynone	lb.	.66 @	.90
Retardex	lb.	.35 @	.40
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.60

MOLD LUBRICANTS

Aresklene	lb.	— @	—
Cocoa Soapstock	lb.	.06 @	.08
Dipex	lb.	.06 @	.08
Rusco, f.o.b. Nitro	lb.	.12 @	.30
Sericite, f.o.b. N. Y.	ton	65.00 @	—
Soap Tree Bark, cut, sifted	lb.	.06 @	.08
Zip (Mold Wash)	lb.	— @	—

FACTICE OR RUBBER SUBSTITUTES

Amberex	lb.	.13¾ @	—
Black	lb.	.08½ @	—
White	lb.	.08 @	.12
Brown	lb.	.07 @	.11½
Duphax	lb.	.10 @	—

VULCANIZING INGREDIENTS

Sulfur Chloride, yellow (drs.)	lb.	.04 @	.04½
Sulfur flour,			
Refined, 100% pure (bags)	cwt.	3.45 @	—
Commercial (bags)	cwt.	1.95 @	2.80
Telloy	lb.		
Vandex	lb.		

Crude Rubber
Latex and Guayule
Reclaimed Rubber
Tires and Tubes

STATISTICS OF THE INDUSTRY

Rim Production
Automobiles
Gasoline
Cotton Prices

U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1931	497,138	72,918,949	6.54	25,595	4,255,472	7.42	471,543
1932	409,584	31,936,459	3.47	20,929	2,015,612	4.30	388,655
1933	407,817	44,034,064	4.82	20,537	2,601,352	5.65	427,280
1934	449,322	97,898,519	10.06	23,848	5,770,109	11.23	425,615
1933:							
April	20,240	1,291,136	2.85	798	70,111	3.92	19,442
May	26,002	1,694,963	2.93	1,842	189,451	4.59	24,894
June	22,900	1,780,495	3.47	1,276	156,168	5.46	21,624
July	44,625	4,293,111	4.29	1,419	219,945	6.92	43,206
August	44,257	5,391,709	5.44	2,205	302,132	6.12	42,052
Sept.	44,912	6,110,956	6.07	2,369	335,798	8.89	42,543
Oct.	44,474	6,115,330	6.14	2,669	397,167	6.64	41,805
Nov.	40,582	5,850,714	6.44	2,188	333,631	6.81	38,394
Dec.	39,461	5,869,556	6.75	1,888	293,690	6.94	37,573
1934:							
Jan.	47,963	7,403,123	6.89	1,975	352,116	7.96	45,988
Feb.	34,335	5,262,711	6.84	2,133	476,232	9.97	32,202
Mar.	41,119	6,765,173	7.34	2,947	583,313	8.83	38,172
April	43,841	8,232,746	8.37	2,814	588,453	9.18	41,027
May	48,494	10,001,239	9.21	2,389	544,212	10.17	46,105
June*	47,289	10,747,464	10.14	2,012	501,499	11.33	45,277
July	41,443	9,670,617	10.41	2,366	660,199	13.99	39,077
August	31,531	7,873,690	11.15	1,393	400,433	12.83	30,138
Sept.	31,074	8,293,859	11.92	1,665	474,446	12.72	29,409
Oct.	28,318	8,203,447	12.93	2,058	620,754	13.46	26,260
Nov.	36,325	10,470,076	12.87	1,230	327,672	11.89	35,095
Dec.	17,590	4,974,374	12.62	866	240,780	12.46	16,724
1935:							
Jan.	39,675	10,852,308	12.21	977	278,229	12.72	38,698
Feb.	47,271	12,291,242	11.61	1,845	480,440	11.62	45,426

* Revised.

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All Quantities in Long Tons)

	Guayule: Tons	Guayule: Dollars	Balata: Tons	Balata: Dollars	Jelutong: Tons	Jelutong: Dollars	Liquid Latex (1): Tons	Liquid Latex (1): Dollars
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1931	—	—	1,208	411,692	5,777	1,019,010	4,650	884,355
1932	—	—	708	147,403	4,607	616,596	5,085	601,999
1933	—	—	1,658	2,261,869	5,989	944,895	11,085	1,833,671
1934	402	75,349	1,054	438,209	4,988	943,752	13,070	3,633,253
1934:								
Feb.	—	—	68	36,346	453	102,471	885	193,732
Mar.	51	9,464	145	51,080	25[illegible]	43,532	1,134	257,545
April	100	18,928	128	50,965	533	98,658	1,334	321,390
May	100	18,928	143	65,471	538	95,710	1,407	368,642
June	51	9,422	84	49,881	388	71,672	1,458	421,317
July	—	—	160	63,963	482	87,412	1,231	385,733
August	100	18,607	100	36,732	516	85,651	1,169	369,335
Sept.	—	—	48	14,415	259	47,542	936	312,967
Oct.	—	—	14	2,797	278	48,287	922	282,503
Nov.	—	—	60	20,169	332	60,904	887	296,447
Dec.	—	—	6	2,458	192	31,947	581	184,588
1935:								
Jan.	—	—	81	34,687	448	80,097	848	287,583
Feb.	—	—	62	20,981	222	33,850	573	179,583

(1) Weight given in pounds of dry rubber contained in latex

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

(All Quantities in Long Tons)

Figures on Monthly Basis

	1928	1929	1930	1931	1932	1933	1934	1935
Jan.	34,403	43,002	36,194	28,557	29,648	22,645*	39,284*	47,103
Feb.	33,702	41,594	33,302	28,797	31,821	21,392*	40,609	43,187
Mar.	35,688	44,730	35,540	32,788	29,505	17,483*	47,097	
Apr.	32,772	47,521	39,686	33,321	27,518	25,928	44,947	
May	37,333	49,233	39,386	37,817	30,957	44,074	43,012	
June	37,676	43,227	34,195	37,916	41,475	50,743*	40,241	
July	37,407	41,526	29,508	31,397	29,976	49,614*	32,647	
Aug.	42,927	38,274	30,850	27,586	23,721	44,428*	33,310	
Sept.	39,882	34,707	25,515	23,638	23,847	35,281*	30,352	
Oct.	40,857	34,800	27,516	22,277	22,286	31,543*	31,347	
Nov.	37,461	27,659	23,691	22,943	23,231	28,831*	34,842	
Dec.	31,232	25,531	21,687	21,409	18,015	28,757*	36,662	
Tot.	441,340	469,804	375,980	348,986	332,000	400,719*	454,350*	

* Revised.

Reclaimed Rubber in the United States

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

(All Quantities in Long Tons)

Year	Production	Consumption: Tons	Consumption: % to Crude	Stocks*	Year	Production	Consumption: Tons	Consumption: % to Crude	Stocks*
1925	132,930	137,105	35.6	13,203	1930	157,967	153,497	40.8	22,000
1926	180,582	164,500	45.9	23,213	1931	133,351	124,126	33.9	19,257
1927	189,144	178,471	47.6	24,980	1932	75,608	77,504	23.4	16,354
1928	208,516	223,000	50.4	24,785	1933	99,560	81,602	19.9	20,746
1929	218,954	226,588	48.4	27,464	1934	110,010	100,597	22.3	23,079

Figures on Monthly Basis

	Production	Consumption: Tons	Consumption: % to Crude	Stocks*		Production	Consumption: Tons	Consumption: % to Crude	Stocks*
1934:									
Jan.	9,828	7,000	17.8[a]	24,263	July	9,446	8,175	25.0	24,926
Feb.	9,504	7,646	18.8	23,356	Aug.	8,160	8,493	25.5	24,607
Mar.	11,479	9,683	20.6	25,113	Sept.	6,974	7,028	23.2	24,540
Apr.	10,185	9,387	20.9	22,033	Oct.	8,145	8,167	26.1	24,511
May	10,848	9,500	22.1	22,887	Nov.	7,268	7,775	22.3	23,999
June	10,820	9,459	23.5	23,664	Dec.	7,353	8,284	22.6	23,079
1935:									
Jan.	10,465	11,261	23.9	22,291	July	.....	.....	...	.....
Feb.	10,072	9,374	23.3	22,989	Aug.	.....	.....	...	.....
Mar.	.....	.....	...	.....	Sept.	.....	.....	...	.....
Apr.	.....	.....	...	.....	Oct.	.....	.....	...	.....
May	.....	.....	...	.....	Nov.	.....	.....	...	.....
June	.....	.....	...	.....	Dec.	.....	.....	...	.....

* Stocks on hand at the end of month or year.
[a] Revised.

U. S. Consumption of Gasoline

(Bureau of Mines Statistics)

(In Thousands of Barrels of 42 Gallons)

	1933*	1934	1935		1932	1933*	1934
January	26,397	29,416	28,062	**August**	**35,706**	**37,400**	**38,933**
February ..	23,320	25,048	26,509	September .	33,828	34,580	34,877
March	28,123	30,528		October ...	32,680	33,022	37,544
April	29,791	32,735		November .	29,895	30,312	34,839
May	33,709	38,141		December ..	27,110	28,572	30,486
June	37,699	36,296					
July	34,087	37,393		Total	373,900	377,003*	406,267

* Revised on basis of final 1933 figures issued September 26, 1934 by Bureau of Mines.

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1932																																
December	3⅛	3⅛	3⅛	—	3¼	3¼	3¼	3¼	3¼	3¼	—	3⅛	3¼	3¼	3¼	3¼	3¼	—	3⅛	3⅛	3⅛	3¼	3⅛	3⅛	—	—	3⅛	3⅛	3⅛	3¼	—	3⅛
1933																																
January	—	—	3⅛	3⅛	3⅛	3¼	2⅛	—	3⅛	3⅛	3¼	3⅛	3⅛	3⅛	3⅛	3	3⅛	2⅛	—	3	3	3	—	3	3⅛	3⅛	2⅛	2⅛	2⅛	2⅛	3	3
February	2⅛	2⅛	2⅛	3⅛	—	3	2⅛	—	3	—	3	—	2⅛	3	—	2⅛	3⅛	2⅛	3⅛	2⅛	3⅛	3⅛	3⅛	2⅛	2⅛	2⅛	2⅛	2⅛	2⅛	2⅛	3⅛	3
March	2⅛	3	3⅛	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3⅛	4	4	3⅛	3⅛	3⅛	3⅛	2⅛	2⅛	2⅛	2⅛	2⅛	2⅛	2⅛	3⅛
April	2⅛	—	2⅛	—	2⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	3⅛
May	4⅛	4⅛	4⅛	3	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛
June	6⅛	6½	6⅛	4⅛	6⅛	6⅛	6⅛	6½	6⅛	6½	6⅛	6⅛	6⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	6⅛	6⅛	6⅛	6⅛	6⅛	6⅛
July	6½	7⅛	7⅛	8	7⅛	7½	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	8½	8⅛	7⅛	7⅛	8⅛	8⅛	8⅛	8⅛	7⅛	7⅛	7⅛	7⅛	7⅛	8⅛	8⅛	7⅛	7⅛	7⅛	7	7⅛
August	7⅛	7⅛	7⅛	8	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛
September	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛	7⅛
October	7⅛	7⅛	7⅛	8	7⅛	8	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛
November	7⅛	8	—	8⅛	9⅛	9⅛	9⅛	8⅛	8⅛	—	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	9	9⅛	—	—	8⅛
December	9¼	9¼	—	9¼	9⅛	8⅛	8⅛	8⅛	8⅛	—	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	9	—	—	8⅛
1934																																
January	—	9	8⅛	9	9	9	—	—	—	—	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	9⅛	9⅛	9⅛	8⅛	8⅛	9⅛	9⅛	9⅛	9⅛	10	10	10	10	10	9⅛
February	10⅛	10½	9⅛	—	10⅛	10⅛	10⅛	10⅛	10⅛	10⅛	—	10⅛	10⅛	10⅛	10⅛	9⅛	10⅛	—	10⅛	10⅛	10⅛	10⅛	10⅛	10⅛	10⅛	10⅛	10⅛	10⅛	—	—	—	10½
March	10⅛	11⅛	11⅛	—	10⅛	10⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	—	—	—	11
April	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	12	12⅛	12⅛	12⅛	12⅛	12⅛	12	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛
May	14⅛	14⅛	14⅛	15⅛	13⅛	13⅛	15⅛	13⅛	14	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛
June	13	14⅛	14⅛	12⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛
July	14	14⅛	15	—	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛
August	14⅛	—	—	—	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛
September	—	—	—	—	15⅛	15⅛	15⅛	15⅛	15⅛	15⅛	14⅛	—	13⅛	12⅛	13⅛	13⅛	13⅛	14⅛	14⅛	14	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛	14⅛
October	14⅛	13⅛	14	13⅛	13⅛	14	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	—	13⅛	12⅛	12⅛	12⅛	12⅛	12⅛	13	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛
November	13⅛	13	13	—	13	13⅛	13⅛	13⅛	13⅛	13⅛	12⅛	12⅛	12⅛	12⅛	12⅛	13	13	13	13	13	12⅛	12⅛	12⅛	12⅛	12⅛	13⅛	13⅛	12⅛	12⅛	12⅛	12⅛	12⅛
December	13⅛	—	12⅛	13	—	—	13⅛	13⅛	—	—	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	13	13	13	12⅛	12⅛	—	12⅛	—	12⅛	12⅛	12⅛	12⅛	12⅛	11⅛	12⅛
1935																																
January	13⅛	13⅛	—	13⅛	13⅛	—	13⅛	13⅛	13⅛	13⅛	13⅛	—	—	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	13⅛
February	12⅛	12⅛	—	12⅛	12⅛	12⅛	12⅛	13⅛	13⅛	13⅛	13⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛
March	12⅛	12⅛	—	12⅛	12⅛	12⅛	12	12⅛	12	—	—	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛
April	11⅛	11⅛	—	11⅛	11⅛	11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1929

Year	Cents	Year	Cents	Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15	1922	17.50	1926	48.50
1911	141.30	1915	65.85	1919	48.70	1923	29.45	1927	37.72
1912	121.60	1916	72.50	1920	36.30	1924	26.20	1928	22.48
1913	82.04	1917	72.23	1921	16.36	1925	72.46	1929	20.55

Average Monthly Price per Pound Since 1928

	1929 Cents	1930 Cents	1931 Cents	1932 Cents	1933 Cents	1934 Cents	1935 Cents
Jan.	20.14	15.24	8.34	4.38	3.08	9.32	13.10
Feb.	23.7	15.85	7.70	4.03	2.95	10.45	12.92
Mar.	24.55	15.34	7.71	3.35	3.01	11.01	11.50
Apr.	21.18	14.93	6.43	3.02	3.56	12.10	
May	21.46	14.24	6.49	3.09	4.95	13.26	
June	20.64	12.45	6.35	2.66	6.15	13.51	
July	21.30	11.24	6.37	2.89	8.01	14.60	
Aug.	20.59	9.96	5.38	3.63	7.31	15.47	
Sept.	20.37	8.28	5.08	3.84	7.30	15.36	
Oct.	19.67	8.20	4.87	3.65	7.64	13.96	
Nov.	16.62	9.01	4.65	3.44	8.66	13.04	
Dec.	16.12	9.05	4.64	3.24	8.87	12.98	
Average for Year	20.55	11.98	6.17	3.49	5.96	12.92	

London Closing Prices of Ribbed Smoked Sheets

(In Pence Per Pound)

Day	Jan.	Feb.	Mar.	Apr.	Day	Jan.	Feb.	Mar.	Apr.
1	—	6 3/16	6 7/16	5 11/16	17	6 7/16	—	—	
2	6 3/16	6 1/16	6 1/4	5 11/16	18	6 3/16	6 1/4	5 13/16	
3	6 7/16	—	—	5 13/16	19	6 7/16	6 3/16	5 3/4	
4	5 15/16	6 3/16	6 3/16	5 15/16	20	—	6 3/16	5 11/16	
5	6 3/16	6 3/16	6 1/16	5 15/16	21	6 3/16	6 3/16	5 11/16	
6	—	6 1/16	6 1/16	5 15/16	22	6 1/16	6 1/16	5 11/16	
7	6 3/16	6 1/16	6	—	23	6 1/16	6 1/16	5 11/16	
8	6 1/16	6 3/16	6 1/16		24	6 1/16	—	—	
9	6 3/16	6 1/16	6		25	6 1/16	6 3/16	5 13/16	
10	6 3/16	—	—		26	6 1/16	6 1/16	5 13/16	
11	6 1/16	6 1/16	5 13/16		27	—	6 1/16	5 13/16	
12	6 1/16	6 1/16	5 13/16		28	6 1/16	6 1/16	5 13/16	
13	—	6 1/16	5 13/16		29	6 1/16	—	5 15/16	
14	6 1/16	6 3/16	5 7/8		30	6 1/16	—	5 15/16	
15	6 1/16	6 1/16	5 7/16		31	6 1/16	—	—	
16	6 3/16	6 1/16	5 7/16						

Average Monthly Price Per Pound

Month	1932 Pence	1933 Pence	1934 Pence	1935 Pence	Month	1932 Pence	1933 Pence	1934 Pence	1935 Pence
Jan.	3.052	2.264	4.429	6.434	Aug.	2.654	3.811	7.401	
Feb.	2.760	2.093	4.920	6.292	Sept.	2.485	3.728	7.409	
Mar.	2.047	2.099	5.136	5.745	Oct.	2.425	3.957	6.806	
Apr.	1.876	2.323	5.712		Nov.	2.518	4.096	6.294	
May	1.825	2.966	6.207		Dec.	2.444	4.200	6.295	
June	1.750	3.392	6.245		Average for Year	2.434	3.233	6.159	
July	1.875	3.860	7.053						

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Date	Feb.	Mar.	Apr.	Date	Feb.	Mar.	Apr.	Date	Feb.	Mar.	Apr.
1	12.55	12.60	11.30	11	12.55	11.30		21	12.65	11.05	
2	12.45	12.60	11.25	12	—	11.25		22	—	11.30	
3	—	—	11.20	13	12.55	11.45		23	12.55	11.20	
4	12.50	12.55	11.20	14	12.55	11.50		24	—	—	
5	12.55	12.55	11.20	15	12.65	11.50		25	12.55	11.40	
6	12.50	12.50	11.30	16	12.65	11.20		26	12.50	11.35	
7	12.55	12.50	—	17	—	—		27	12.65	11.35	
8	12.65	12.45		18	12.80	10.65		28	12.55	11.25	
9	12.60	12.30		19	12.65	10.95		29	—	11.30	
10	—	—		20	12.65	11.00		30	—	11.30	
								31	—	—	

Average Monthly Price Per Pound

	1932 Cents	1933 Cents	1934 Cents	1935 Cents		1932 Cents	1933 Cents	1934 Cents	1935 Cents
Jan.	6.65	6.23	11.25	12.70	Aug.	7.43	9.55	13.40	
Feb.	6.85	6.05	12.28	12.58	Sept.	6.30	9.64	13.00	
Mar.	6.86	6.39	12.30	11.63	Oct.	6.30	9.58	12.48	
Apr.	6.16	7.02	11.80		Nov.	6.22	10.04	12.53	
May	5.72	8.64	11.44		Dec.	6.00	10.17	12.76	
June	5.02	9.47	12.20		Average for Year	6.41	8.63	12.36	
July	5.87	10.76	12.84						

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1933	1934	1935	AFLOAT 1933	1934	1935	ON HAND AND AFLOAT 1933	1934	1935
Jan.	396,376	368,660	346,084	32,539	45,768	42,066	428,915	414,428	388,150
Feb.	381,794	358,681	*335,007	32,898	53,063	42,969	414,692	411,744	*377,976
Mar.	390,135	353,242		29,531	54,722		419,666	405,786	
Apr.	382,167	351,981		30,745	56,251		412,912	408,232	
May	364,623	351,329		43,342	57,921		407,965	409,250	
June	333,954	358,149		63,608	46,698		397,562	404,847	
July	326,609	364,883		57,435	45,869		384,044	410,752	
Aug.	325,148	362,647		53,084	40,278		378,232	402,925	
Sept.	334,637	359,667		57,255	38,831		391,982	398,498	
Oct.	343,579	362,018		58,568	38,247		402,147	400,265	
Nov.	353,852	361,236		57,140	38,625		410,992	399,861	
Dec.	364,541	352,632		55,606	47,644		419,147	400,276	

(Rubber Manufacturers' Association figures raised to 100%)

* Revised.

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1933	1934	1935	At end of	1933	1934	1935
Jan.	36,481	38,570	81,807	July	41,178	50,490	
Feb.	37,182	38,752	87,605	Aug.	39,480	48,953	
Mar.	40,689	40,501		Sept.	39,237	56,103	
Apr.	40,911	42,413		Oct.	37,101	63,079	
May	41,998	42,190		Nov.	36,139	67,656	
June	43,032	45,674		Dec.	35,615	72,285	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1934					
Oct.	57,272	59,469	61,043	62,058	
Nov.	64,232	65,728	67,109	67,088	
Dec.	67,901	69,337	70,256	71,849	72,314
1935					
Jan.	73,407	75,821	78,138	79,530	
Feb.	82,160	83,622	85,202	87,222	
Mar.	88,097	89,388	91,153	91,298	92,602

Stocks in Liverpool

1934					
Oct.	54,944	55,266	57,414	57,944	
Nov.	58,380	59,616	60,281	60,543	
Dec.	60,164	60,125	62,243	62,573	62,617
1935					
Jan.	63,132	65,099	65,977	65,768	
Feb.	66,429	67,043	67,846	68,243	
Mar.	68,266	68,963	69,440	69,616	69,332

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1932	1933	1934	1935	End of	1932	1933	1934	1935
Jan.	48,850	22,525	40,405	50,588	July	17,017	36,972	65,099	
Feb.	46,954	21,530	41,884	51,628	Aug.	20,649	38,601	59,227	
Mar.	46,591	24,594	47,933		Sep.	20,415	36,948	54,905	
Apr.	39,663	25,460	48,431		Oct.	23,158	37,282	54,155	
May	38,690	29,822	76,393		Nov.	25,419	39,018	49,282	
June	19,770	34,676	73,218		Dec.	25,341	38,269	51,255	

STOCKS IN OTHER CENTRES

End of: 1934	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
Jan.	36,788	39,250	1,115	7,271	3,305
Feb.	39,630	36,563	906	5,366	3,420
Mar.	37,275	33,365	904	4,083	3,519
Apr.	33,765	32,640	905	4,070	3,624
May	7,213	39,370	897	3,066	3,556
June	20,243	36,870	902	3,533	3,273
July	27,235	35,430	1,263	4,683	3,094
August	30,507	36,060	1,322	5,713	2,849
Sept.	33,661	39,630	1,290	5,137	3,075
Oct.	31,762	40,560	1,401	5,675	3,113
Nov.	33,590	39,870	1,404	5,631	3,081
Dec.	23,173	45,000	1,326	5,732	3,293
Jan., 1935	33,609	40,000	1,397	5,768	3,477
Feb.	32,062				

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total		Total		Total
1924	21,863,311	1928	24,247,282	1932	6,261,336
1925	26,001,664	1929	24,141,502	1933	8,713,962
1926	24,199,524	1930	17,364,096	1934	12,255,118
1927	19,700,003	1931	11,253,800	1935	

1935:		1934:		1934:	
January	1,868,723	May	1,140,132	September	526,472
February	1,616,398	June	1,015,730	October	629,878
March		July	1,155,024	November	577,713
April		August	752,074	December	1,199,240

U. S. Tire and Tube Statistics[1]

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1927	1928	1929	1930	1931	1932	1933	1934
Production	64,439	77,944	68,726	50,965	48,739	40,085	45,304	47,233
Shipments	64,059	74,296	69,395	53,638	48,151	40,260	44,094	46,687
Inventory[2]	10,264	13,624	11,838	9,003	7,775	7,644	8,888	9,455

Figures for Recent Months

	PRODUCTION 1933	1934	1935	SHIPMENTS 1933	1934	1935	INVENTORY 1933	1934	1935
Jan.	2,258	3,922	4,626	2,597	3,222	3,663	7,237	9,684	10,398
Feb.	2,339	4,335		2,292	3,285		7,377	10,725	
Mar.	2,038	5,180		2,092	4,223		7,290	11,651	
Apr.	3,123	4,470		3,654	4,438		6,778	11,981	
May	5,189	4,456		5,180	5,332		6,760	11,127	
June	6,100	4,342		6,305	5,228		6,615	10,219	
July	5,714	3,353		5,497	4,157		6,844	9,437	
Aug.	4,994	3,533		4,707	4,308		7,070	8,697	
Sept.	3,999	2,936		3,503	3,183		7,595	8,419	
Oct.	3,249	3,287		2,537	3,010		8,462	8,657	
Nov.	3,039	3,341		2,197	3,191		9,247	8,779	
Dec.	3,082	3,778		3,531	3,109		8,888	9,455	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1927	1928	1929	1930	1931	1932	1933	1934
Production	70,823	80,180	68,829	52,420	48,333	36,891	42,546	46,228
Shipments	72,896	77,127	70,592	54,938	50,021	37,911	41,391	45,046
Inventory[2]	13,692	16,117	12,807	9,999	7,922	6,749	7,815	9,180

Figures for Recent Months

	PRODUCTION 1933	1934	1935	SHIPMENTS 1933	1934	1935	INVENTORY 1933	1934	1935
Jan.	2,093	3,530	4,259	2,535	3,199	3,722	6,197	8,403	9,621
Feb.	2,224	4,077		2,102	3,323		6,357	8,445	
Mar.	1,883	5,194		1,902	4,118		6,369	10,244	
Apr.	2,853	4,735		3,051	4,342		6,189	10,585	
May	5,189	4,359		5,180	4,902		6,760	10,043	
June	5,448	4,097		5,778	5,309		6,097	8,795	
July	5,603	3,531		5,211	4,323		6,440	8,053	
Aug.	4,916	3,680		4,687	4,198		6,628	7,555	
Sept.	3,827	3,110		3,472	3,024		7,008	7,639	
Oct.	3,506	3,219		2,676	2,689		7,831	8,151	
Nov.	2,863	3,169		2,103	2,767		8,625	8,503	
Dec.	2,631	3,503		3,410	2,850		7,815	9,180	

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete for 1929-1933. Beginning 1934, the Association reported its figures to be 97% complete.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States Total	Passenger Cars	Trucks	Canada Total	Passenger Cars	Trucks	Grand Total
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931	2,389,730	1,973,090	416,640	82,621	63,477	19,144	2,472,351
1932	1,370,678	1,135,493	235,187	60,816	50,718	10,098	1,431,494
1933*	1,920,057	1,573,512	346,545	65,924	53,855	12,069	1,992,126
1934	2,778,739	2,190,099	588,640	116,890	92,538	24,352	2,895,629
1934							
Feb.*	231,707	187,666	44,041	8,571	7,101	1,470	240,278
Mar.*	331,263	274,738	56,525	14,180	12,272	1,908	345,443
Apr.*	354,745	289,031	65,714	18,363	15,451	2,912	373,108
May*	331,652	273,765	57,887	20,161	16,504	3,657	351,813
June*	308,065	261,852	46,213	13,905	10,810	3,095	321,970
July*	266,576	223,868	42,708	11,114	8,407	2,707	277,690
August*	234,810	183,500	51,310	9,904	7,325	2,579	244,714
Sept.*	168,871	123,909	44,962	5,579	4,211	1,368	174,450
Oct.*	132,491	84,503	47,988	3,780	2,125	1,655	136,271
Nov.*	78,465	45,556	32,909	1,697	1,052	645	80,162
Dec.	183,187	128,059	55,128	2,732	2,334	398	185,919
1935							
Jan.	292,765	229,199	63,566	10,607	8,269	2,338	303,372
Feb.	340,544	278,150	62,394	18,114	13,885	4,229	358,658

* Revised.

Exports of Crude Rubber from Principal Producing Countries

(*Long Tons*)

	BRITISH MALAYA [1]							DUTCH EAST INDIES [6]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon [2]	India & Burma [3]	Sarawak [4]	British North Borneo [5]	Siam [4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China [5]	Amazon Valley	All Other [6]	World Total [7]
1923	252,816	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,415
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	514,487
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,562	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,970	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1931	519,740	125,506	394,234	61,769	8,470	10,451	6,247	4,218	75,952	87,747	116,009	11,696	12,121	3,292	792,203
1932	478,252	92,539	385,713	48,973	3,888	6,960	4,664	3,451	61,312	79,837	85,871	13,883	6,450	1,816	702,818
1933	573,412	167,377	406,035	63,351	4,527	10,874	7,555	7,765	73,851	91,861	149,659	18,394	9,883	2,737	846,312
1933:															
March	42,153	7,964	34,189	4,905	389	571	458	304	5,092	6,466	6,999	1,102	995	103	61,573
April	36,823	7,758	29,065	4,582	272	624	583	235	5,226	5,969	8,147	1,122	556	183	56,564
May	42,917	13,664	29,253	4,643	475	1,091	583	359	6,782	7,298	13,195	1,371	918	143	66,111
June	41,482	16,538	24,944	5,198	377	1,149	582	632	7,352	6,654	14,779	1,369	704	124	63,864
July	50,531	18,772	31,759	4,201	270	1,358	728	797	7,367	8,580	16,534	1,310	913	166	73,983
Aug.	52,436	17,869	34,567	5,839	246	955	728	926	6,460	7,985	15,161	808	1,116	323	75,114
Sept.	49,607	15,146	34,461	5,111	125	1,027	727	611	5,868	9,164	15,005	1,702	656	274	74,731
Oct.	61,002	17,390	43,612	5,674	271	959	750	979	6,329	8,682	15,170	1,426	965	314	85,131
Nov.	54,599	20,142	34,457	6,097	516	1,020	750	1,303	6,684	9,951	14,474	1,553	956	366	78,127
Dec.	57,579	18,110	39,469	7,435	964	989	750	1,046	7,030	10,183	17,274	3,779	930	302	90,151
1934:															
Jan.	55,055	16,128	38,927	6,929	1,531	1,197	805	1,290	6,513	7,975	13,913	1,109	576	127	80,892
Feb.	57,867	15,027	42,840	8,620	775	1,005	805	1,264	6,706	9,211	13,696	1,232	831	105	87,090
March	58,515	19,907	38,608	6,750	1,412	1,360	806	1,363	8,655	10,539	19,084	1,968	846	113	91,504
April	56,748	20,957	35,791	5,157	762	1,447	894	1,311	7,282	9,808	19,250	1,330	440	236	83,708
May	69,403	25,691	43,712	8,870	1,106	1,892	1,397	997	12,104	14,606	26,598	1,243	726	328	113,579
June	53,282	20,981	32,301	5,397	1,425	1,886	644	1,497	4,860	6,192	15,956	1,593	765	377	72,893
July	53,335	22,829	30,506	3,818	710	1,662	1,048	2,399	5,762	7,369	14,415	1,703	353	252	69,997
Aug.	52,641	17,865	34,776	4,948	552	1,714	1,048	1,908	5,340	8,901	11,356	1,610	710	251	73,114
Sept.	61,051	17,889	43,162	6,555	294	1,438	839	1,626	5,722	10,738	14,688	1,665	764	222	87,713
Oct.	47,045	10,226	36,819	6,544	413	1,412	1,196	1,328	5,970	6,643	5,556	1,413	840	401	68,535
Nov.	51,140	8,759	42,381	6,756	501	953	941	1,356	7,621	7,123	5,338	2,356	1,017	334	76,676
Dec.	59,575	15,375	44,200	8,481	990	1,237	680	2,043	10,865	12,953	12,354	2,956	1,035	239	98,033
1935															
Jan.	56,720	17,142	39,578	5,202	2,269	1,630	1,222	2,614	3,812	5,371	8,704	2,650	1,196	200*	74,448
Feb.	50,593	17,676	32,917	5,551	820	1,887	760	2,288	4,395	7,663	15,194	2,076			

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, 2,670 in 1929, and 1,274 in 1930. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons in 1924, 6 tons in 1925, 20 tons in 1926, about ½ ton in 1927, and 1 ton in 1928, and practically none in 1929, 1930 and 1931. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons in 1924, 2,239 tons in 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, 1,302 tons in 1929, and 2,656 tons in 1930. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands, and includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. * Figure is provisional; final figure will be shown when available.

NOTE: THE FIGURES FOR 1933 ARE REVISED AS OF JANUARY 25, 1935 AND REPRESENT FINAL FIGURES

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States [1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,409
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,222
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	632,768
1928	407,572	4,846	36,49ob	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	24,284	17,169	11,774	15,886	9,445	3,024	6,440	864	4,650	894,638
1930	458,036	120,069	68,503	45,488	28,793	33,039	18,639	16,387	5,354	10,635	2,924	7,710	2,400	4,468	822,445
1931	475,993	86,170	46,466	39,688	25,261	43,483	10,149	30,671	7,649	11,009	2,220	6,360	2,605	7,717	794,641
1932	393,844	44,086	42,506	45,121	20,917	56,027	14,469	30,637	12,576	9,519	2,851	7,262	4,359	9,444	693,618
1933	398,365	73,335	61,953	54,120	19,332	66,831	19,341	29,830	13,534	11,166	1,243	7,831	5,520	10,402	.....
1933:															
Sept.	43,886	4,341	4,111	5,841	2,620	5,369	2,055	2,168	794	864	189	604	790	577	74,211
Oct.	43,366	3,373	4,921	4,772	2,580	6,150	1,836	2,084	604	1,118	310	777	441	686	73,081
Nov.	39,633	3,955	5,419	4,086	2,184	6,296	942	4,483	301	1,129	222	878	493	882	70,903
Dec.	38,864	6,524	5,415	4,933	1,773	6,865	1,029	2,400	190	1,360	213	703	776	1,772	72,817
1934:															
Jan.	47,114	9,503	6,472	6,057	1,721	5,628	2,517	2,749	566	2,173	381	1,185	484	1,355	88,276
Feb.	33,087	10,785	5,301	5,490	1,854	4,570	2,388	3,399	950	1,538	287	464	656	516	73,357
Mar.	39,306	14,008	4,980	6,453	3,411	5,655	1,394	4,018	671	965	284	836	394	976	86,242
Apr.	42,262	9,999	3,210	6,701	2,419	5,679	1,966	1,326	415	504	262	1,217	752	465	77,177
May	47,412	9,786	3,634	6,499	2,218	6,905	2,218	4,360	769	214	322	940	142	1,768	87,192
June	46,785	16,564	3,803	6,171	2,208	6,745	1,887	3,145	1,512	837	331	843	1,146	1,624	93,601
July	40,308	12,266	4,051	5,494	2,430	5,739	708	1,640	732	810	540	1,602	747	1,094	78,161
Aug.	31,405	13,728	3,660	3,078	1,948	4,945	1,795	6,829	658	669	239	1,033	277	1,495	71,759
Sept.	30,345	11,254	4,244	2,607	2,770	7,346	1,486	4,487	743	501	339	980	465	477	68,044
Oct.	27,323	18,897	3,424	2,148	3,043	7,227	1,296	3,681	798	693	447	813	675	254	70,719
Nov.	35,982	15,875	3,176	3,425	1,568	5,580	1,764	4,488	516	379	187	1,382	542	215	75,079
Dec.	17,305	15,816	3,605	5,207	2,849	3,904			1,312	—168	139	1,143	615	762	
1935															
Jan.	39,546	20,383	5,573	4,286	2,670				1,099	419	158		468	1,245	
Feb.	45,999								848		477				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1] United States imports of guayule are included in this compilation. * Figure is provisional; final figure will be shown immediately it becomes available.

A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

The Market Place

Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Chemicals and Compounding Materials —

ACCELERATORS—
Ureka C—Ureka Blend B—Ureka.—A-1, A-7, A-11, A-16, A-19, A-32, Z-88, A-510, DPG
ANTIOXIDANTS — Flectol A, Oxynone
The RUBBER SERVICE Laboratories Co.
1012 Second National Bldg., Akron, Ohio
A Division of MONSANTO Chemical Wks.

ALUMINUM FLAKE
A uniform, fine, low gravity, white reinforcing pigment. *Furnished to the rubber trade for 25 years.*
The Aluminum Flake Co.
Akron, Ohio

ANTIMONY Pentasulphide, golden and crimson, very fine, pure.
Rare Metal Products Co.
Belleville, N. J.
Direct Factory Representation

ASBESTINE—Specially prepared for use in Rubber. Send for liberal working samples.
SOLE PRODUCERS
International Pulp Co.
41 Park Row New York City

CALCENE—The Ideal low gravity, white reinforcing pigment. Gives high tensile and elongation properties with exceptionally good resistance to tear and abrasion.
The Columbia Alkali Corporation
BARBERTON, OHIO

CARBON BLACK—*Micronex*
the world's standard gas black, universally known as the "King of Rubber Pigments."
Binney & Smith Co.
41 East 42nd St. New York City

CABOT CERTIFIED CARBON BLACK
"Spheron"
Godfrey L. Cabot, Inc.
77 Franklin St. Boston, Mass.

IN this section are listed the products of the leading producers of materials and equipment used by rubber manufacturers.

When buyers refer to these pages for their needs, your name and address and a description of your products should be available here. The cost of a one-inch listing is only $5.00 per issue—the lowest cost of advertising space available in the rubber field.

THE RUBBER AGE
250 West 57th St., New York

CARBON BLACK— *Aerfloted*
Arrow Black for rubber compounding. Standard for grit-free uniformity.
J. M. Huber, Inc.
460 West 34th St. New York

CARBON BLACK
SUPREME—*the up-to-date standard for rubber*
Imperial Oil & Gas Products Co.
Union Bank Bldg., Pittsburgh, Pa.

CARBON BLACK
DIXIE...KOSMOS
Used throughout the world
UNITED CARBON COMPANY
Charleston, W. Va.
New York • Akron • Chicago

CARBON BLACK
DISPERSO . . . *the specially developed Carbon Black that gives* BETTER DISPERSION.
WISHNICK-TUMPEER, INC.
251 Front Street New York

CARBON BLACK
"Kosmos" "Dixie" "Sterling"
"Peerless" "Sterling Super"
Columbian Carbon Co.
Akron, Ohio

CATALPO—The universal and standard rubber pigment now being used in treads, solids, tubes, carcass frictions, etc.
Moore & Munger
33 Rector Street, New York City

CHEMICALS

For Rubber	For Industry Generally	
Accelerators	*Acids*	*Latex*
Antioxidants	*Oil of Myrbane*	*Lotol*
Specialties	*Aniline Oil*	*Dispersions*

The Naugatuck Chemical Co.
1790 BROADWAY NEW YORK

CHEMICALS and compounding ingredients; Clay, Accelerators, Mineral Rubber.
R. T. Vanderbilt Co.
230 Park Ave. New York City

CHEMICALS and Mineral Ingredients—Whiting, Clay, Talc, Barytes, Colors. Heavy Calcined Magnesia. Carbonate of Magnesia, Pumice Stone.
Standard Since 1890
Whittaker, Clark & Daniels, Inc.
245 Front St., New York

COLLOIDAL SULPHUR
COLLOIDAL ZINC OXIDE
COLLOIDAL COLORS
Heveatex Corporation
78 Goodyear Ave., Melrose, Mass.
Offices in New York, Akron, Chicago

COLORS—*for Rubber*
Fine organic colors—Reds, Blues, Oranges, Violets, Greens—or any shade to meet your requirements—also Rubber Dispersed Colors
Ansbacher-Siegle Corporation
Rosebank, Staten Island, N. Y.
820 So. Clinton St., Chicago, Ill.
Agents in Principal Cities

COLORS
BRILLIANT ORGANIC DYES; PERMANENT, NON-BLEEDING, LOW COST For All Cures
The RUBBER SERVICE LABORATORIES CO.
1012 Second National Building
Akron, Ohio

CUMAR— Paracumarone Resin.
A neutral gum for rubber compounding.
Samples and prices on request.
The Barrett Company
40 Rector St. New York City